

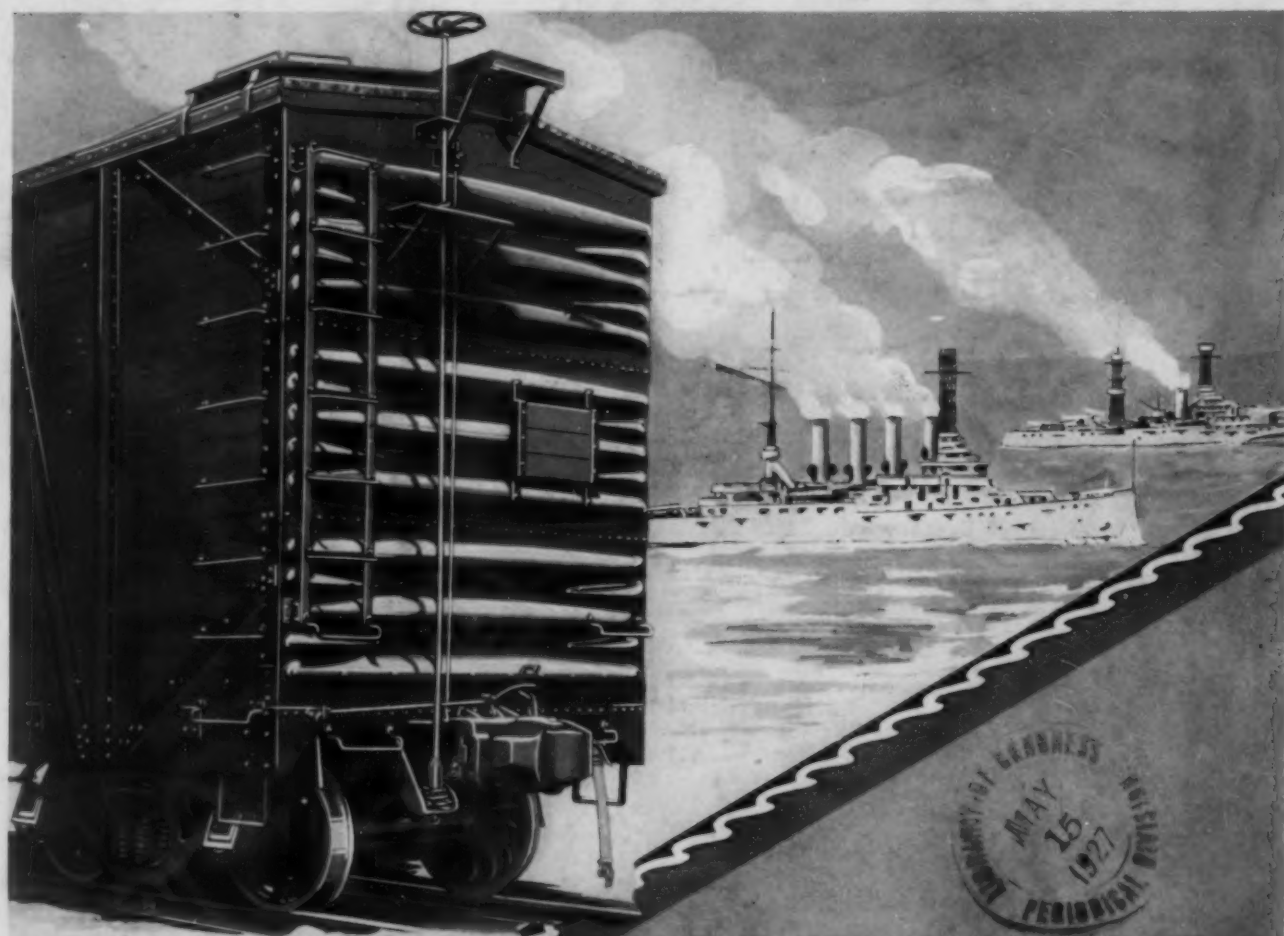
Railway Age

WITH WHICH IS INCORPORATED THE RAILWAY REVIEW

FIRST HALF OF 1927—No. 24

NEW YORK—MAY 14, 1927—CHICAGO

SEVENTY-SECOND YEAR



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Railway Age

Vol. 82

May 14, 1927

No. 24



A. F. E. C. Near West Palm Beach

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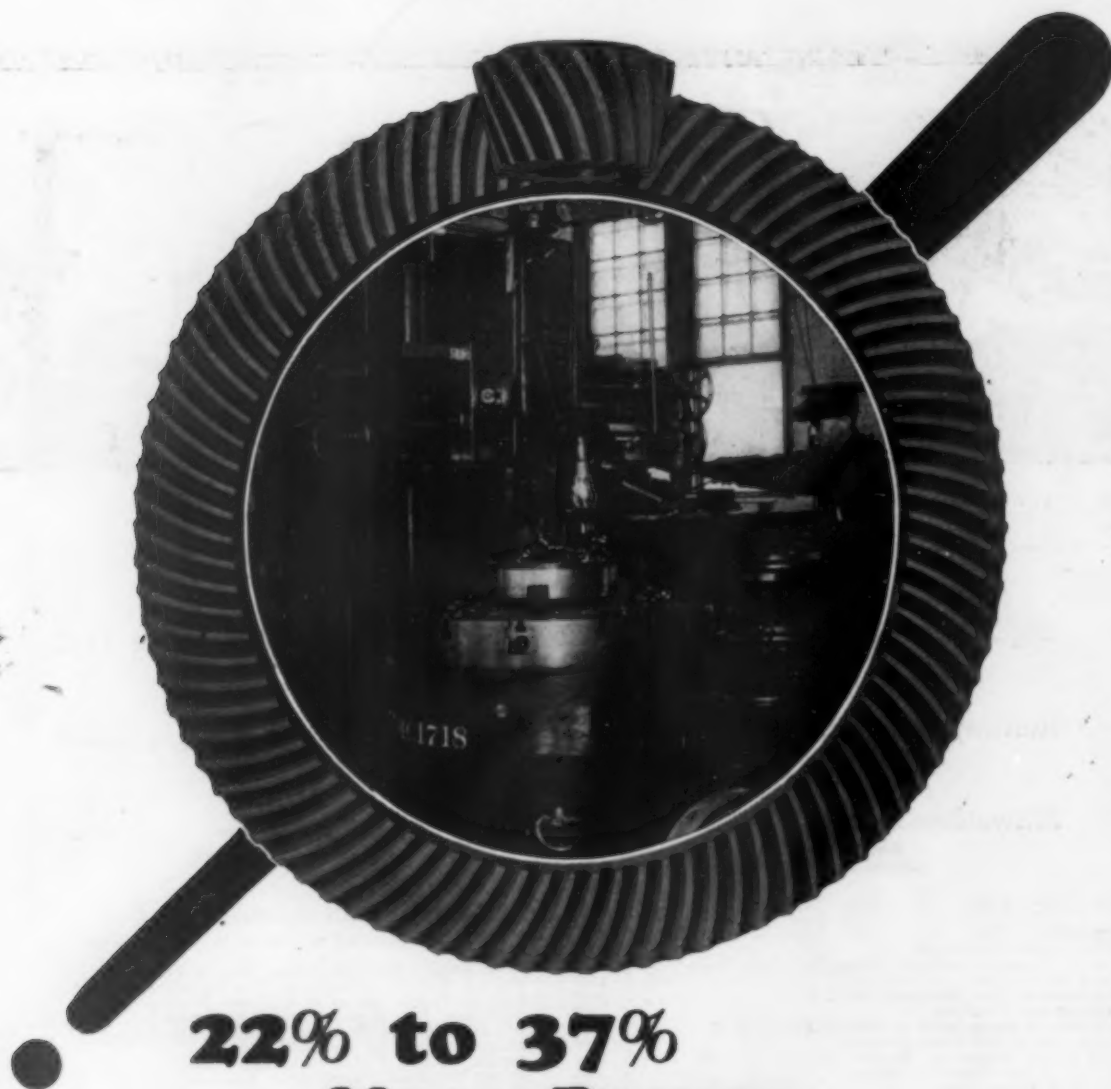
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Railway Age

Vol. 82, No. 24

May 14, 1927

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Page 5 of Advertising Section

Protection of Cars

THE closed car section of the Car Service Division of the A.R.A. has issued a circular warning against the use of cars, suitable for carrying grains and food products, for transporting commodities which render the equipment unfit for the higher class traffic. The circular sets forth instances of where oil and gravel and tar have collected and covered the car floor until it became necessary to renew the entire floor. In helping to pursue a program of railroad efficiency, it would be well for shippers of commodities and employees of the railroads to remember that carelessness in loading properly a car meant for more restricted use, not only runs up the equipment repair bill, but adds to the number and size of damaged-freight claims filed, two factors that are anything but essential to a program of transportation efficiency.

Grade Crossing Season at Hand

WITH the spring well advanced and the touring season getting under way, it is time for the railroads to look again to their highway grade crossings. The havoc played by the winter on crossings, with its periodic freezing and thawing, is now at an end, and with the frost out of the ground the time has arrived to repair or rebuild such crossings as have become rough or dangerous, and particularly those which will carry the burden of the heavy summer and fall highway traffic. With over 20,000,000 motor vehicles in use throughout the country, operated by an equal or greater number of good, bad and indifferent drivers, supplemented by the increasing number of inexperienced drivers which invariably appear in the spring, the problem of the railroads in maintaining safe, smooth-riding crossings is not a small one, but is nevertheless, one which they must assume and carry out whole-heartedly if they are to assume their share of the responsibility for the safety of motorists, and incidentally of their own passengers and equipment; and furthermore, if they are desirous of obtaining the good will of the not small number who will base their opinions of the railroad upon the character of the crossings which they encounter.

British Transport Institute Widens Its Field

THE Institute of Transport of Great Britain is growing in influence as a high-caliber technical professional society. In Great Britain it is fostering high standards of real scholarship in the study and discussion of transportation subjects. Its holding out of advancement to higher grades of membership as rewards for

study and achievement seems to be providing a genuine incentive for the younger men in transportation work. And now it is enlarging its activities by extension to South Africa where, according to the South African Railways Magazine, it has already laid plans for extensive educational activity. Formation of other branches of this society in India, Australia, New Zealand and Argentina are reported to be under consideration.

Supervisors' Clubs

MANY of the considerable number of supervisors' clubs which have been functioning during the past year or so are about to close their active season's work. Some of these have accomplished really remarkable results in inducing a greater amount of teamwork and co-operation between the different supervisors and their departments, and in bringing about better understandings of the relationships of the departments. The individual members of the clubs have also benefited greatly in many cases because of the knowledge they have gained of the principles upon which successful leadership is based. While most of the supervisors' clubs or organizations have been gaining in strength and enthusiasm, some of them have marked time, or, in a few cases, have even gone out of existence. Those clubs which have functioned successfully have meant so much to the individual members and to the managements, that it is important to determine the reasons for their success, in order that they may be made still more effective and also that the weaker or less progressive clubs may be inspired and helped. Now, while the details of the season's activities are fresh in mind, is the time for a constructive analysis and study and the formulation of plans for next season.

Depreciation Order Postponed One Year

THOSE who wondered what the Interstate Commerce Commission was driving at when it promulgated its order last November requiring depreciation accounting on fixed railway property will find no small amount of satisfaction in the announcement of postponement of the effective date of the order for one year. The Commission explains that the very extensive preliminary work necessary on the part of the carriers before the new plan of accounting is established could not be accomplished prior to January 1, 1928, and that the postponement is desirable in order to afford time for consideration of a petition for rehearing and reconsideration of certain aspects of the order which the carriers have given notice they intend to file. The commission was unfortunate in that it made its order public at about the same time as the United States Supreme Court handed down its de-

cision in the Indianapolis Water Case in which, among other things, the deduction from value of depreciation figured on the straight-line method was severely condemned. The commission's depreciation order happened to be strongly in favor of it and the two decisions while not directly related were nevertheless decidedly in contrast on this point. There was also evidence that the commission had become completely confused on the score of the differences between accounting depreciation or retirement reserves and actual lessening of value due to wear and tear or deferred maintenance. The commission may have expected to cause discussion of the important matters involved in its depreciation order, but its order would have been more understandable if it had digested the complexities of the subject more completely before it put itself on record.

Mercury-Arc Rectifiers

LARGE, high-voltage mercury-arc rectifiers have recently been given extensive publicity and this has resulted in a considerable amount of speculation concerning the use of such rectifiers in the traction field. An intelligent guess concerning the future must be founded on what is now known of rectifier characteristics. At voltages of 1500, or higher, the rectifier is more efficient than any type of rotating machinery. Voltage regulation is good and the rectifiers can be operated in parallel with shunt-wound generators without employing auxiliary devices; they also have a large overload capacity. They have an average power factor of from 93 to 96 per cent at loads above three-quarters rating, but cannot be used to correct power factor, i.e., cannot be made to give a leading power factor such as the synchronous condenser. Neither can they be used for returning to the power system the power which is developed by regenerative braking; they are not reversible. Rectifiers for 600-volt circuits weigh more and require more floor space than corresponding rotary converters, but at higher voltages this condition is reversed. The rectifiers have the added advantage of being practically noiseless. The greater part of maintenance costs will apparently be such as are incidental to maintaining the very high vacuum required. These should not be higher than those incidental to maintaining an automatically controlled synchronous converter substation. First costs of converter and rectifier substations are very nearly the same. A number of 600-volt rectifier substations are now being used in this country for supplying power to urban and interurban railways, but apparently the rectifier is best suited for heavy traction requirements at higher voltages. The Illinois Central is using rectifiers in some of its 1500-volt substations and the degree of success these rectifiers attain will undoubtedly influence future installations. If they meet all of the 1500-volt requirements there is nothing to prevent their use at 3000 volts or more.

Teaching an Appreciation of What Statistics Mean

COMMENTING upon our editorial "Teaching Employees the Meaning of Statistics" (*Railway Age*, April 30, page 1309) a correspondent suggests that stockholders ought to undergo a similar course of instruction. To the possible objection that annual reports are already too bulky to contain much new matter and

that the stockholder is not interested anyhow, his answer is that it is the business of the writer of railroad reports to make them interesting. Gross ton-miles per train-hour and net ton-miles per train-hour he believes to be most significant figures, counteracting "tonnage madness," i.e., making a fetish of tonnage alone, without regard to the factor of movement. Furthermore ton-miles, gross and net, per engine-hour will, he points out, expose the extravagant practice of double heading. We believe our correspondent's idea to be worthy of serious consideration. Statistics, after all, are not so dreadful. But they are like olives—the taste has to be gradually acquired. Every man is something of a statistician—at least as far as his own affairs are concerned. For instance, he is familiar with the difference between \$5,000 and \$10,000 as a salary; he knows what a ton of coal ought to cost and how much his insurance premium is. The problem of the railroad is to make this average man as familiar with the "salary" the railroad earns and the cost of its ton of coal as he is with his own personal and household statistics. Some of the banks have been putting their statements into popular form, giving an idea what each item really means and relating it to the familiar domestic accounts of the depositor. Perhaps some such plan might be successful on the railroads. This much is certain—if employees and minor stockholders could, somehow, be brought to a realization of the meaning of some of the more important railroad operating and financial statistics, the public and employee relations problem would be tremendously simplified. Is not this goal sufficiently attractive to make every plausible method of reaching it worthy of consideration and study?

Train Control and Train Operation

IN considering the operation of trains with automatic control, the questions of intermittent or continuous control, of the advisability of cab signals, etc., have by no means been answered as yet. For example, of the 45 roads on which the orders of the Interstate Commerce Commission are now effective, the intermittent train stop is being used on 25, and the continuous train stop with cab signals on eight. Train control in which the speed is controlled to either two or three limiting values is used on 11 roads, continuous cab signals being used on 10 of these.

In other words, there are two lines of thought on each of these questions. One school, with the intermittent devices, considers that an automatic brake application which operates as a check on the stop and caution indications of the existing wayside signals, is sufficient and provides safety without reducing the efficiency of the direction of train operation by signal indication. Another school does not believe that this procedure affords added capacity for the road and that continuous cab signals offer the most desirable and efficient system of increasing track capacity and safety of train operation. The use of speed control is also considered by many as a valuable facility.

The wide diversity of opinion among experts demonstrates the complexity of the problem at present. However, the fact that similar systems are being used under different conditions of speed, traffic density, and grades will make it possible to arrive at more definite conclusions relative to the desirability of train stop or train control,

intermittent or continuous, cab or wayside signals. The various railroads, in co-operation with the Bureau of Signals and Train Control of the Interstate Commerce Commission and the American Railway Association, are compiling reports of the operation of the train control and train stop equipment, with particular reference to costs, failures and engine mileage.

It would now appear time to inaugurate an extensive study of the benefits to train operation effected by train stop or train control. The safety features are quite readily recognized on many roads but the benefits to train operation in the way of increased track capacity and elimination of train stops are as yet practically unknown quantities. If train control is to be extended over a large portion of the trunk line mileage of the country, the expenditure should be justified by increased operating efficiency as well as by safety. A study of the operating features might well be directed by such a body as the Train Control Committee of the American Railway Association.

Coal Miner's Wages and Freight Rates

CRITICISMS of railway rates always have been common and often illogical, but no criticisms of them ever made have been more illogical and unfounded than those recently directed against existing coal rates by spokesmen of the United Mine Workers and some other persons interested in securing a reopening of union mines and an increase in their production as compared with that of the non-union mines.

A good example of such comment is that made by Harry Fishwick, president of district No. 12 of the United Mine Workers at a meeting in Peoria. This district includes miners in the Illinois and Indiana bituminous fields. Mr. Fishwick claimed that the "controlling reason" why coal from non-union mines in West Virginia and Kentucky has been for some years driving coal produced in the union mines of Indiana and Illinois out of the markets in these and other states is that the Interstate Commerce Commission has so adjusted freight rates as unfairly to discriminate against the union mines. He said that "if the Illinois coal operators desire to regain their former competitive position in the markets, they should bend their efforts toward securing a fair and equitable adjustment of freight rates instead of asking the miners to accept a reduction in wages."

The true reason for the attacks being made upon the present adjustment of coal rates by the United Mine Workers is indicated by Mr. Fishwick's reference to wages. It is not true that advantages in freight rates have enabled or are now enabling non-union coal from West Virginia and Kentucky to drive Indiana and Illinois union coal out of the Chicago and other western markets. The hauls to these markets from the West Virginia and Kentucky fields are longer and the rates *per ton* are higher than from the Illinois and Indiana mines. In support of the claim of unfair discrimination much use has been made of the fact that the rates *per mile* for these long hauls are less than the rates *per mile* for the shorter distances from the Illinois and Indiana mines. But, excepting under unusual conditions, the rate *per mile* always becomes less as the distance freight is hauled increases on every commodity transported by rail in this or any other country. This is mainly because two

terminal expenses must always be incurred whether a haul is long or short, and the shorter a haul is the greater is the amount of terminal expense that must be spread over each mile of it.

There are differences between the rates per mile charged on union coal moving different distances, and on non-union coal moving different distances, as well as between those on union and non-union coal moving different distances. Whether it is union or non-union coal has made no difference in the adjustment of rates. The rate on hard coal produced in union mines from Scranton, Penn., to Chicago is 7.3 mills per ton per mile, while to St. Louis, a longer distance, it is only 6.7 mills, but nobody has claimed there is a discrimination against Chicago merely because the rate per mile is higher. Likewise, the freight rate on lumber from Dallas, Texas, to Chicago is 8.3 mills per ton per mile; to Cleveland, a longer distance, 7½ mills, and to Buffalo, a still longer distance, only 6.6 mills.

Within recent years the relative amounts of coal produced in union and non-union bituminous mines have been reversed. Prior to the strike of 1922 about two-thirds of the bituminous coal was produced in union mines; nowadays, however, even when there is no strike in the union mines, apparently about two-thirds of it is produced in non-union mines. The reasons for this great change are obvious. The prevailing wage scale in the non-union mines in West Virginia and Kentucky is about \$5.25 per day, while in the union mines of the central competitive territory it is about \$7.50 or 40 per cent more. The result of this and other differences in production costs is that a Chicago dealer can buy coal at a non-union mine for about \$1.45 per ton, while in the largest district of the central competitive fields he must pay \$2.50 per ton at the mine.

These figures, while not of universal application, are typical of the entire situation. They mean that a 50-ton carload of non-union coal can be bought for \$72.50, while for a carload of union coal there must be paid at the mine \$125. The freight rates from the non-union mines to Chicago are higher than from the union mines, but there is not anywhere near enough difference in them to offset this difference in the cost of mining coal, and it would be utterly unreasonable and, in fact, impossible to so adjust rates as to offset the differences in the costs of production.

What the miners' union is trying to do is plain enough. A branch of this union in Pennsylvania already has petitioned the Interstate Commerce Commission to take into consideration the differences in wages in union and non-union mines in fixing freight rates, and that is what Mr. Fishwick and others evidently are trying to get done in the central competitive field. How would this be done? If the rates on non-union coal were increased the result would be to increase the price that consumers must pay for it. If the rates on union coal were reduced, the railways serving union mines would thereby in effect be called upon to pay part of the difference between the wages of union and non-union coal miners. Have not the railways burdens enough of their own, without being called upon to shoulder part of the burden imposed upon the union mine operators by the fact that their wage scales are 40 per cent higher than those of the non-union coal mine operators?

Neither the Interstate Commerce Commission nor the railways made nor had anything to do with making the wages paid in either union or non-union mines, and freight rates should be made in entire disregard of differences in union and non-union miners' wages. The Commission and the railways certainly would soon get

themselves into a fine mess if they should begin trying to adjust rates in accordance with differences in the wages paid and the other labor policies followed by concerns engaged in the same industry and competing with each other for business.

Recapture and Federal Taxation

PRESUMING for the sake of argument that recapture of excess earnings is sound economics, a question arises as to what becomes of the money that may be collected from the more prosperous railroads in the form of one-half the net railway operating income in excess of 6 per cent earned on the property devoted to the public use for services of transportation. By the terms of section 15a the money is to be paid into a revolving fund from which the Interstate Commerce Commission shall be authorized to make loans to carriers needing funds or it may be used to purchase equipment and facilities which will be leased to carriers. The recaptured funds are not to be given to the less prosperous carriers as many may have believed. Loans are to bear a rate of interest of 6 per cent payable semi-annually and in the case of lease of equipment or other facilities, the payment is to be also at a 6 per cent rate plus allowances for depreciation. One of the most important requirements is that a carrier borrowing funds must evidence its ability to repay the loan on maturity and to meet the obligations attendant upon the transaction generally.

An interest rate of 6 per cent might have appeared satisfactory enough at the time the Transportation Act was passed. Today, now that interest rates are lower, it succeeds in making the revolving fund useless. This comes about because no carrier of good credit would have to pay a rate of 6 per cent on borrowed money and because conversely a carrier that would have to pay 6 per cent interest on funds borrowed at this time would not be able to evidence sufficiently good credit to be allowed to borrow from the fund. It, therefore, appears that any money paid into the revolving fund will lie idle, accumulating interest to add to its own bulk but serving no useful purpose to the railroad industry, or to the user of railroad service. What else does this mean than that from the standpoint of the railroad industry or the user of railroad service who pays the rates, recapture is merely increased federal taxation to be added to a burden that is already excessive?

Beyond this is the fact that the taxes paid by the railroads to the federal government are increasing beyond measure. In 1925 they totaled 86 million dollars and were 24 per cent of all railroad taxes. In 1925 as compared with 1924, for instance, federal taxes increased 15½ per cent while state and local taxes which bear the brunt of most of the criticism regarding increased railway taxation, increased only 1½ per cent. The 1926 figures of taxes paid by the railroads to the federal government are not yet available. However, the figures for such roads as are available are indeed eloquent:

Road	Total taxes 1926	Per cent federal	Increase 1926 over 1925		Per cent federal of total increase in taxation
			Total taxes	Federal taxes	
Norfolk & Western..	\$11,075,000	55	\$2,475,000	\$2,175,692	88
Central of Georgia..	1,519,852	...	179,931	109,366	61
Missouri-Kansas-Texas	3,367,208	32	499,619	251,610	50
Atchison, Topeka & Santa Fe.....	20,986,148	43	3,421,105	2,535,227	74
Northern Pacific....	9,151,147	16	—195,749	51,132	...
Union Pacific.....	15,725,933	37	2,263,052	1,545,495	68

The figures in the last column of this table are the most significant because in the case of each road but

one the increase in the federal taxes in 1926 over 1925 formed the bulk of the increase in all taxes. The one exception was the Katy and in its case the increase in federal taxes represented an even half of the increase. The Northern Pacific had a decrease in its state, county and municipal taxation but it had no decrease in its federal taxes.

The trouble with increases in taxes is that the taxpayer usually finds it possible to do little about his increased tax burden except to complain about it. It has been pointed out that money paid by the railroad industry in recapture—what with the fact that the recaptured funds are to be idle—will be nothing else than taxation insofar as the payers of it are concerned. But, fortunately, the railroads in the case of recapture can do something about it. They are, indeed, doing something about it by assisting in the St. Louis & O'Fallon case in which the effort will be made to assure that the rate base or valuation on which the 6 per cent excess earnings are figured is fair and in accordance with the law of the land.

Going back to the original assumption, that recapture is good economics, there must also be an assumption that if there must be recapture, it will be kept within reason. But as things stand, recapture is to all interests and purposes federal taxation, and it is only too apparent that the railways already have a burden of federal taxation that is of staggering proportions. It will be unfortunate, indeed, for the railroad industry if large sums in recapture are to be added on top of it. Seldom have the railroads had to face a greater responsibility, therefore, than comes to them in the St. Louis & O'Fallon case.

Changing Section 15-A

NO provisions of any law for the regulation of railways ever have been the subject of more controversy than those of Section 15-A of the Transportation Act. Animated discussion of them promises to be renewed by some recent developments.

Just before Congress adjourned Representative Newton of Minnesota introduced, at the request of officers of the National Industrial Traffic League, a bill to make important changes in these provisions. Their interpretation also is involved in the O'Fallon Railway recapture case. In the petition filed in the United States District Court attacking the decision of the Commission regarding the valuation of this road and the recapture of its earnings; a claim not heretofore set up has been made regarding the recapture provisions. This claim is that none of the O'Fallon's earnings are subject to recapture for the reason that in no year have the railways of the entire group to which it belongs earned what the Commission has held would have been a fair return for the group.

Administration of the Section

Section 15-A has not been administered by the Interstate Commerce Commission as either its advocates or opponents expected. Its advocates favored it because they believed the Commission would so adjust rates as to enable the railways to earn each year approximately a fair return. Its opponents criticized it on the ground that it "guaranteed" a fair annual return, showing they expected the Commission to carry out its provisions strictly. It is a significant commentary upon the way

the law has been administered that the Commission has not done what its advocates hoped for and its opponents likewise feared. Excepting when it granted advances in rates in 1920, it apparently has never changed a single rate to help any group of railways earn a fair return. It has refused since 1922 to make some reductions of rates in the west upon the ground that the western carriers were not earning a fair return, but it did this only after it had made reductions in 1922 which plainly created this situation, and it has persistently failed to grant advances without which it has been plain that the western group would be unable indefinitely to earn $5\frac{3}{4}$ per cent.

While the Commission has thus persistently refused to carry out the rate making provisions of Section 15-A, it has shown considerable industry in trying to carry out the recapture provisions, which are a part of the same section. Its method of administration of the section has prevented the weaker lines from earning the return that was intended for them and at the same time tends to compel the stronger lines to pay "excess" earnings from total earnings smaller than it was intended they should have. The recapture provisions also tend to do injustice because a road may earn less for several years than a "fair return" and then if it earns more in a single year its earnings in that year become subject to recapture.

Proposed Changes

The bill introduced by Representative Newton would completely abolish the recapture of earnings and make other important changes. Section 15-A now requires the Commission to determine and announce from time to time what percentage upon their aggregate valuation would be a fair annual return for each group of railways, to so adjust the rates that, as nearly as may be, they will be able to earn it, and in determining what is a fair return to take into consideration the needs of the country for adequate transportation. The bill introduced by Representative Newton makes no reference to valuation. It provides merely that the Commission shall so adjust rates that "under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, carriers may have an opportunity to earn an average annual net railway operating income sufficient, as nearly as may be, as the basis of such credit as in the judgment of the Commission may be requisite to meet the transportation needs of the country." * * * "The commission shall, from time to time, fix a period of years for which average annual net railway operating income shall, as nearly as may be, equal the amount found by the commission necessary in the public interest."

The claim set up by the counsel for the carriers in the O'Fallon case, that no earnings of any railways in a group are subject to recapture except in a year when the carriers of the entire group earn a fair average return, has an important bearing on these proposed changes in the law. If the Supreme Court should support this claim it would destroy the strongest objections to the recapture provisions.

The *Railway Age* advocated Section 15-A, and we have always opposed its repeal or modification. This has been done because we have believed, first, that in view of experience before the Transportation Act was passed the Interstate Commerce Commission would not allow the railways to earn adequate net returns unless provisions of law expressly defining its duty in this regard were in existence, and, secondly, that if the railways were not allowed to earn adequate net returns,

they would be unable to render adequate and satisfactory service with reasonable economy.

Average Return Has Declined

If it is to be assumed that the Commission would in the future administer Section 15-A as it has thus far, the conclusion must follow that the passage of the Newton bill would be desirable. It was expected when the law was passed that under it rates would be so adjusted that the railways would be enabled to earn relatively larger net returns than they had received before. In fact, on the average they have been restricted to relatively lower average net returns. The Commission's reports show that in the ten years ending with 1917 net return on property investment averaged about 4.9 per cent and during the last six years only 4.5 per cent. Certainly if the latter figure indicates the average return they would be allowed to earn in future, if Section 15-A were kept in effect, the railways should favor its repeal in order to get rid of the recapture provisions. But how much good would the abolition of the recapture provisions do if in future the railways as a whole were restricted to an average annual return of 4.5 per cent? No intelligent man can believe that with such an average return they would be able to raise enough capital to provide satisfactory service and operate efficiently. The repeal of the recapture provisions would benefit the stronger lines some, but would do practically nothing to solve the nation's broad railroad problem.

Is there anything else in the Newton bill that would help solve it? Nothing whatever. It merely directs the Commission to so adjust rates that the "carriers may have an opportunity" to earn as much as the Transportation needs of the country require, and there already is a provision to the same effect just as clear and more mandatory in its language in Section 15-A.

We believe that open-minded consideration should be given to proposals for modification of Section 15-A, particularly recapture provisions. We are not in favor of any modification of the law which will make less explicit its declarations as to the duty of the Interstate Commerce Commission. When Congress assumes the responsibility of regulating the railways it assumes the obligation both to them and the public of so regulating that they will be able to earn reasonable net returns, and when it delegates their regulation to the Commission it should do so in terms clearly setting forth the duty of the Commission to let them earn such returns.

However badly it may have been administered by the Commission, Section 15-A has done good by encouraging investors and railway managers to believe that in course of time railway rates and net returns will be fairly regulated. Except for this encouragement the large amount of capital that has been invested within the last five years would not have been invested and the improvements effected in service would not have been made. Everyone who desires to see private ownership of railways maintained and the increase in the efficiency and economy of railway operation continued should strongly oppose any changes in Section 15-A which would not leave perfectly clear the intention of Congress that the railways shall be so regulated that they will be able to earn higher average annual returns than the Commission heretofore has allowed them to earn. The policy of regulation followed by the Commission during the five years prior to 1916 was the main cause of the congestions and car shortages during the next few years. It was that experience which caused the passage of Section 15-A, and that experience should not be forgotten in considering proposed changes in it.

Dig 210-ft. Foundation Wells for Cleveland Terminal

Water, marsh gas and unstable clay introduce many problems in carrying column footings to great depth

By Frank W. Skinner
Consulting Engineer, New York



View Showing Work on Large and Small Wells with Concrete Plant in Background—In the Small View, One of the Rectangular Hoists

WHEN a lofty building and its contents weigh perhaps one hundred million pounds with concentrated loads of as much as one thousand tons on single columns and stable foundation material lies at a depth of 250 ft. below the ground level, the construction of adequate foundations becomes extremely difficult and expensive. This was the problem which confronted the builders of the \$11,000,000 headhouse for the Cleveland Union Station now under construction at the northwest corner of the public square in Cleveland.

This building will cover an area 306 ft. long by 260 ft. wide, and will have a tower 120 ft. square extending 52 stories above the street level. The structural steel frame alone, which is being fabricated by the American Bridge Company, will weigh 17,000 tons. Investigation of the site showed that bed rock was covered to a maximum depth of 250 ft. by earth, sand and top soil and a thick stratum of dense but greasy, unstable clay entirely

unsuited to serve as a foundation for any but the lighter loads. It was clear, therefore, that it would be necessary to carry the column footings down through the clay so that all except the lighter loads would be supported directly on bed rock. This plan not only entailed an enormous volume of excavation, but introduced the hazard of subterranean waters and considerable quantities of the dangerous methane or marsh gas which has frequently been the cause of fatalities in deep foundation work at Cleveland in past years. A study of available methods for sinking foundations to this great depth led to the adoption of the Chicago or open-well method as being most practical under the circumstances.

Clear the Site with Steam Shovels

The site was prepared by steam shovel excavation to a maximum depth of 52 ft. below the ground surface to make room for the basement and sub-basement of the

building and to provide a level site for the excavation of the wells required for 87 cylindrical piers from 4 ft. to 10½ ft. in diameter and from 120 to 210 ft. in depth. The drainage of this general excavation was cared for by several 3-in. Domestic pumps delivering water into a 3,000-ft. ditch that discharged into the Cuyahoga river.

The excavation of each well was started by opening a square pit through the earth and sand, that was sheeted with planks placed horizontally. When the ground water level was reached the excavation was reduced in section a sufficient amount to permit the driving of an enclosure of Lackawanna steel sheet piling with steam hammers handled by a derrick boom installed on an Erie steam shovel that had participated in the general excavation.

When clay was encountered the section was changed to a cylindrical one with vertical curbing. The excavation through the clay was made with the aid of pneumatic spades furnished by the Chicago Pneumatic Tool Company, using from one to four spades per well depending upon the number of men that could be employed, as determined by the diameter of the well. The spoil was loaded in buckets which were hoisted by parafined manila rope, of which about 5,000 lin. ft. had to be provided. These ropes were carried up over pulleys supported by

Well Curbing Heavily Reinforced

As the wells were excavated, they were curbed with 4-ft. and 6-ft. lengths of vertical tongue and groove staves, each tier of which was stayed in a cylindrical shape by two rings of inside hoops, made of either 3-in. by ¾-in. or 4-in. by 1-in. steel bars. When exposure to the atmosphere resulted in swelling of the clay, these hoops were reinforced to withstand the increased pressure by introducing heavy wooden drums, each of which consisted of two horizontal timber segments with their parallel sides separated by two 15-ton jack screws that were constantly adjusted to resist the tremendous pressure that would otherwise have collapsed the sheeting and perhaps destroyed the shaft. Sufficient clearance was provided between the two sides of each drum to permit the passage of the muck buckets which were also used by the workmen for entering and leaving the wells, although rope ladders were provided for emergency use.

The ground water which flowed into the wells during the course of the work was removed by 3-in. Economy pumps operated by 10-hp. electric motors mounted in the same housing and suspended with them from the ground surface. One pump of this type was found adequate to remove the water from a well to a depth of 100 ft. or more, these pumps having a capacity of 200 gal. per min.



Steam Shovels Remove the Spoil from the Well Excavations

tripods or rectangular frames erected over the site of each well and wound on spools or drums of 20 single-caisson Thomas winches and 6 double-drum Thomas hoists operated by 2-hp. and 20-hp. electric motors respectively. These hauled the buckets with single and double lines at speeds of 100 ft. or more per min. The spoil from these buckets was dumped on the ground adjacent to the wells, whence it was loaded into large side-dump cars on a service track by a Marion steam shovel previously used for the general excavation.

against a pressure head of 135 lb. Beyond that depth it was necessary to use two pumps. The first pump was left in a fixed position and the second was introduced below it, being lowered as the work progressed but discharging into the suction line of the upper pump.

Guard Against Trouble from Gas

The water and squeezing was readily controlled but the presence of a large quantity of methane gas at depths of 190 ft. or more, was a much more serious matter and



Yazoo & Mississippi Valley Station at Valley Park, Miss.

Railways in Lower Mississippi Valley Now Bear Brunt of Flood

Railway Age's representative at scene of devastation reports rehabilitation progress in north

THE railways of southern Illinois, southeastern Missouri and northeastern Arkansas are returning to practically normal service. There are no main line tracks under water north of Memphis. Operations in the Illinois Central yards at Mounds are being conducted normally, and trains through that point and Cairo are experiencing no delays. The debris and mud left by the flood on the tracks and in the buildings at Mounds yards have been removed and the damage repaired. On the whole, railroad facilities at Mounds and Cairo withstood the immersion very well and only a relatively small amount of damage was inflicted. The flood at these points was caused by backwater, without current, which explains why there was not greater damage inflicted.

The Mobile & Ohio, the Missouri Pacific, the St. Louis & Southwestern and the Chicago & Eastern Illinois, the roads affected by the break in the levee at Gorham, Ill., and high water at Thebes, have been out of water for about two weeks. Repairs have been made and the actual physical loss will not be great. The C. & E. I. station at Thebes, Ill., had two feet of water in it at one time, but it is a well built structure and shows no ill effects. The yard of the Missouri Pacific at Gale, Ill., is still out of service, all switching being done in the yard of the St. Louis Southwestern at Illmo, Mo., across the river. It is expected that Gale yard will be reopened on or before May 16. The Illmo yard was

not flooded, being situated on a high bluff. The Thebes railroad bridge was also entirely undamaged, since the bridge and its approaches are well above high water level.

The Situation on the Frisco

The River division of the St. Louis-San Francisco, between St. Louis and Memphis, was the only division of that railroad that suffered other than purely local damage. Thirty miles of track were under water on this division, and it was necessary to suspend service for a time. An inspection trip over this division, made May 8, by a representative of the *Railway Age*, reveals that, except for a temporary slow order over a trestle north of Lilibourn, Mo., normal operation is in effect.

During the height of the flood the tracks and station building in Cape Girardeau, Mo., were flooded to a depth of 4½ ft. A small enginehouse at that point was also under water. The station building is substantially constructed of pressed brick, and except for some warping of woodwork, little damage was done to it.

As described in last week's issue, this railway spent about \$125,000 for protective measures, before the water went over the tracks. Crushed stone was piled on the ballast and ramparts of crushed stone in bags were built in the low places. These measures were highly effective, since no track was washed out. At points where the situation was particularly acute, such as bridge

approaches, these ramparts were made very heavy, and reinforced with large pieces of stone. A 100-yd. trestle, with a connecting single span bridge near Nash, Mo., were saved in this fashion. Fortunately, there are many quarries near the sections that were flooded, so that stone was readily available.

There is remarkably little evidence of the railroad having been flooded. At Chaffee, carloads of stone bags and several locomotives with rusty flanges and cylinder heads were the only evidences of the recent catastrophe.

Embankments Withstand Current

Some damage is noticeable as having been done to station driveways and platforms at various places, but this has all been repaired. The trestle which was washed out north of Lilbourn, Mo., was rebuilt, while the flood was still pouring over it. Half a dozen smaller trestles



Negro Refugees on Box Cars South of Rolling Fork, Miss.

were undamaged. Between this trestle and Lilbourn, the tracks and embankments seems to have received the worst pounding, as the flood in this district was caused by the break of the levee at Dorena, Mo., and the water flowed over the tracks in a swift current, as contrasted with comparatively still backwater in other places. About a mile of right-of-way fence was torn down by driftwood in this vicinity, which is the only place on the division where this was observed.

Further Rise in Arkansas Predicted

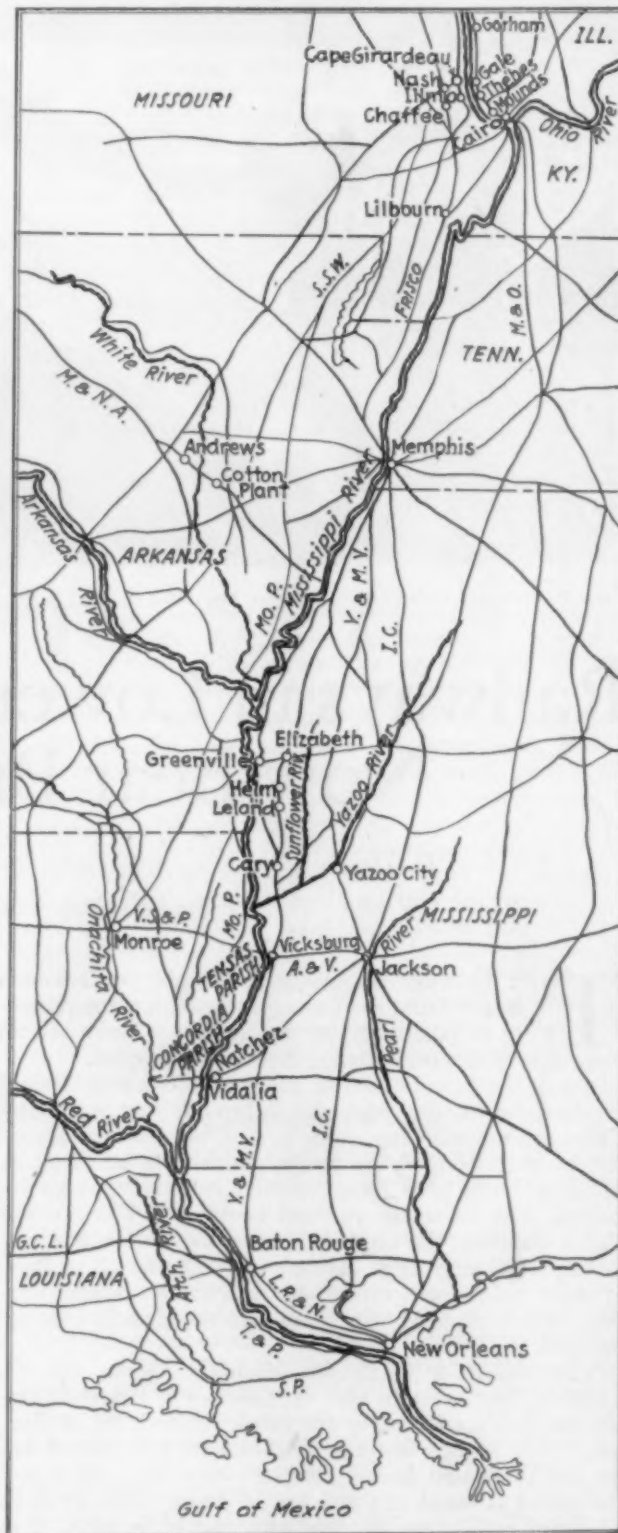
None of the embankment crumbled to any extent. An interesting feature in this regard was that the intermittent widening of embankments built to accomodate track motor cars while a train is passing served as jetties and were instrumental in many cases in preventing the current from striking the main embankment with full force, thus aiding in preventing washouts.

While the territory along the Arkansas river in the vicinity of Little Rock, Ark., was beginning to emerge from the water additional heavy rains north of Ft. Smith, Ark., again placed the entire river bottom in a dangerous situation. The weather bureau at Little Rock predicted that the Arkansas river could be expected to rise four to five feet before May 13. While this new stage will be somewhat less than the flood stage reached during the latter part of April it will still be high enough to interrupt train service.

Roads Aid Relief Work

Practically every railroad in the United States has offered to transport flood relief supplies to the stricken

area free of charge. Members of the Southwestern Passenger Association have agreed to honor requests from the American Red Cross for free transportation to enable flood refugees now concentrated in various camps



The Lower Mississippi

to return to their homes. The arrangement covers the movement of refugees in the affected areas to relief stations and expires on May 15. The Illinois Central has

announced that return transportation will be given refugees traveling as far north as Memphis, Tenn.

Several Roads Report Favorable Conditions

Train service from Little Rock, Ark., to McGehee, a division terminal on the Missouri Pacific, where shops and yards were inundated, was restored on May 7. However, the line between McGehee and Arkansas City, Ark., has not been restored to service.

Several railroads in the flooded district summarized their situation as follows:

Columbus & Greenville.—Flood status improving. Water slowly receding and repairs being made. The portion of track covered by the receding flood was under backwater and damage to it will not be heavy. About 26 miles are still under water. Where there is a stiff current the damage will be great. The amount of damage is uncertain because the water is deep and running swiftly in places.

Louisiana Railway & Navigation Company.—No serious flood damage or delays. Freight service is being maintained at normal though much of it must be detoured to avoid minor washouts.

Louisiana & Arkansas.—The only change in high water conditions on this line since May 2 is a rise of three feet in the backwater from Rhinehart, La., east to the Mississippi river due to main levee breaks above and below Vidalia, La. Currents in the flood water are light, but heavy winds prevail and damage from waves cannot be estimated until the water recedes. All gateways are open except that to Natchez, Miss.

The situation at Vicksburg, Miss., as viewed by the representative of the *Railway Age* editorial staff now

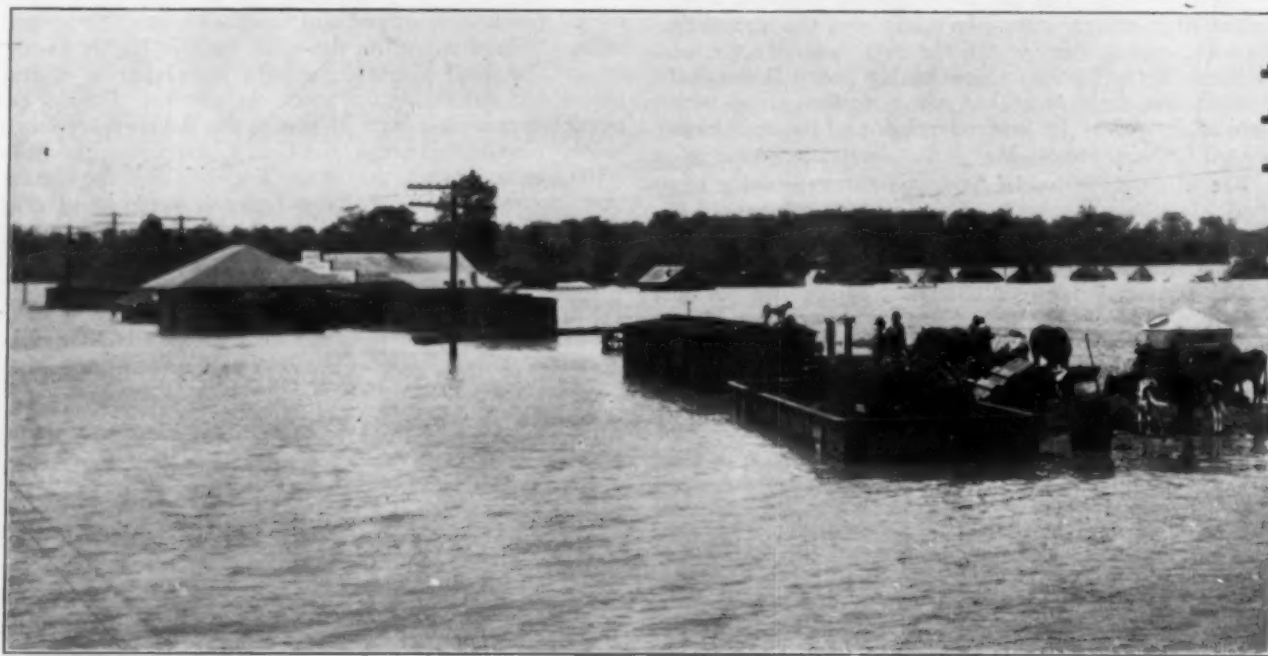
is moving gradually toward the Mississippi. North of the crest, the tracks are slowly emerging from the water. Between Cary, Miss., and the Yazoo river, the water is still 6 ft. over the tracks. In many places



Reinforcing Levee with Sandbags Along Yazoo & Mississippi Valley at Vicksburg, Miss.

the current is so swift that it is expected that the tracks and buildings will be found badly damaged.

In the vicinity of Leland, Miss., the water is falling, revealing that many trestles have been washed out and much embankment badly damaged. One stretch of



Transferring Live Stock from Raft to Gondola at Onward, Miss.

making a survey of the flood zone and telegraphed by him from Vicksburg on May 9, Baton Rouge on May 10 and Alexandria on May 11 was in brief as follows:

The Yazoo & Mississippi Valley Railroad is still out of service between Memphis and Vicksburg by all routes, but trains from the north are being run as far as Rosedale. Greenville is entirely without railway service in any direction.

The crest of the flood on the Yazoo and Sunflower

1,000 ft. will require piling. Train service to Leland is not likely to be restored before June 1, but trains on the Leland line are running south to Helm and north to Elizabeth.

Close Shave for Y. & M. V. Shops

The large shops of the Yazoo & Mississippi Valley at Vicksburg have thus far escaped damaged but the water rose to within 3 in. of the top of the concrete

sea wall. These shops were saved by the use of the company's pumping plant brought from Mounds, Ill. The shops were endangered by water which came under and through the sea wall because of the bursting of sewers and failure of temporary dikes. The pumping plant used consists of one 18-in., one 12-in., and one 10-in. centrifugal electrically driven pumps, mounted on cars. Transformers with a combined capacity of 680 hp. were installed on a third car. These three pumps lifted from 15,000 to 18,000 gal. of water a minute. In addition to these, the company used 20 steam pumps mounted on platform cars, the whole outfit having a capacity of 48,240,000 gal. of water in 24 hours. The passenger station at Vicksburg was not flooded but the cotton platform north of the station was inundated and the flood was flush with the levee in front of the station. The levee was reinforced by sand bagging on a large scale and the water is now receding.

The relief by pumps and other activities of the railroad company not only saved the property of the Illinois Central and the Yazoo & Mississippi Valley, but insured to the benefit of the entire warehouse and manufacturing district, and also the negro dwellings along the river.

The arch bridge of the Alabama & Vicksburg was threatened but was buttressed with sand bags and piling, and has held.

No Service on 75-Mile V. S. & P. Line

Tensas Parish, Louisiana, below Vicksburg, and other parishes adjacent have been almost completely inundated. The Vicksburg, Shreveport & Pacific between Vicksburg and Monroe, La., 75 miles west, suspended all train service. The car ferry landing at Delta Point, La., is 10 ft. under water. In a trip over the line of this road, by boat on May 9, the observer saw only the tops of the telegraph poles. The terrain there is normally marshy, and the railroad has many trestles, all of which were in danger. The superintendent and the roadmaster started for Monroe on May 9 in a boat.

The Missouri & North Arkansas announces that train service has been resumed. This line was submerged between Andrews, Ark., and Cotton Plant, Ark.; three bridges had to be rebuilt.

The car ferry between Natchez, Miss., and Vidalia, La., is out of service and Concordia Parish is almost entirely under water. Missouri Pacific service in the vicinity of Vidalia was discontinued May 8. Vidalia on May 10 was the only station in Concordia parish out of water. The flood was over the tracks many feet and in some places with swift current.

Railroad Forces Aid Government

The Illinois Central placed the entire Yazoo-New Orleans division maintenance forces at the disposal of the government on April 15. Since that time an average of 500 men have been working on weak spots in the levees. Track supervisors have been furloughed to take charge of this work. Only skeleton section gangs are working on the railroad. These merely inspect tracks and place slow orders, if necessary. At Grenada, La., the railroad forces saved the levee after a wave wash had washed away more than two-thirds of it, by fascining 8,000 ft. on curve. At other places similar action saved east bank parishes from inundation. Due to this work none of the New Orleans division is now under water and is not expected to be, despite the fact that it parallels the river from Baton Rouge to New Orleans.

The largest flood prevention work ever undertaken by

a railroad was going on in Baton Rouge. The levee was elevated by railroad forces a maximum of 10 ft. in places, with an average raise of more than 5 ft. The importance of this work is indicated by the fact that the levee was originally 45 ft., and the flood stage is now nearly 47 ft., with over 49 ft. predicted when the crest reaches Baton Rouge about May 15. Double track has been raised for a distance of two miles, for 5 to 10 ft., and is being raised further under high pressure as water continues to rise. Fascining is also being done for a distance of two miles to prevent wave wash and for holding gravel bags. The entire levee for two miles is heavily ramparted with gravel bags. This work required nearly a half million bags of gravel.

The track elevation is done entirely with gravel, no dirt; and traffic has not been interrupted. Over a thousand cars of gravel were used for elevation. Many transverse dikes have been built by the railroad to hold back seepage and a number of steam pumps have been installed to hold this seepage down. Every extra gang on the division, with seven bridge gangs and 15 section gangs are now employed in levee protection. Precautionary measures cost over \$100,000, and are still not completed, but are expected to hold the entire east bank of the levee system from Baton Rouge to New Orleans. The railroad is not affected from Baton Rouge to Vicksburg on account of protection from the hilly banks.

West Bank Situation Alarming

The Yazoo-Greenville division, it is predicted, will be back in service by June 15. An inspection trip over the south end of the New Orleans division indicates little danger. Levees are in good condition. One or two weak spots are being bolstered by railroad forces who have topped, sandbagged and fascined levees for several miles. The situation on the west bank is highly alarming. The Gulf Coast Lines are inundated at a few places, but not enough to interrupt service. Official reports indicate little hope of saving the Bayou des Glaizes levee. Should this break, the Gulf Coast Lines, the Missouri Pacific proper, the Texas & Pacific and the Southern Pacific main lines to New Orleans would be severed and all parishes bordering the Atchafalaya river inundated. Such a break would relieve the east side from all danger. New Orleans is definitely past the danger point. The artificial break near Poydras is now 3,000 ft. wide.

Poydras Crevasse Affects Louisiana Southern

Physical damage to the Louisiana Southern from the artificial break of the levee at Poydras will amount to \$70,000. However, this road has been carrying on extensive industrial development plans successfully. These resulted in a profit during the last two years after many years of steady losses. The present situation ruins all development work for some years to come and these losses will be heavy. The Reparations Committee of New Orleans business men raised a fund to cover losses in the Poydras district. A bond issue is also planned, but the railroad can hardly recover sufficient reparation to pay for the losses sustained, both physical and intangible. The line has been cut into and 10 miles inundated, probably washed out. All rolling stock and movable equipment was placed in safety before the blast.

The Texas & Pacific, Southern Pacific and Missouri Pacific have inclined to car ferries in New Orleans, heavily cribbed, and no damage or suspension of service of car ferries is expected. All lines south of the Red river have emergency stocks of material and men ready in case Bayou des Glaizes levee breaks. The Southern Pacific not under water is the only line south of Glaizes levee

which would have adequate warning should a break occur.

The Louisiana Railway & Navigation Company, although under water most of the distance between the west bank of the Mississippi and Shreveport, due to the Red river, is operating freight trains regularly and with little delay. No bridges have been lost on this line. Approaches have been raised with crushed rock and sandbagged to prevent wave wash. Crushed rock, loose and in sacks, has been very effective all through the flood zone in holding tracks and embankments, particularly where current is running. The Louisiana Railroad, though in the flood zone, follows a ridge and is higher than other lines. It has suffered no damage to the main line and is much used for detouring.

Texas & Pacific Main Line

An inspection trip on the Texas & Pacific main line on May 11 from New Orleans to Alexandria showed levees on the west bank of the Mississippi in good condition, being stopped and fenced to prevent wave wash. Every effort is being made to save the 1,500-ft. steel bridge across the Atchafalaya river at Melville, La. At the time of crossing on May 11 water was pouring over the stringers with a very strong current. The upstream side of bridge was weighted down with hundreds of rails. Approaches have been flashboarded and sandbagged, practically tying the track to the right-of-way. North of Melville the rack is flashboarded and sandbagged for eight miles on the down stream side to hold the track in place in case of the levee breaking, which would put the water five to eight feet over the track here. Several trestles are heavily bulwarked in this vicinity for protection.

Master Boiler Makers Hold Eighteenth Annual Convention

THE eighteenth annual convention of the Master Boiler Makers' Association was held during the week of May 3, at the Hotel Sherman, Chicago. President John F. Raps, general locomotive inspector, Illinois Central, called the first session to order Tuesday morning, May 3, with about 900 members, guests and members of the Boiler Makers' Supplymen's Association in attendance. The meetings ended Friday, May 6, when there was an election of officers for the coming year.

The following officers were elected: President, W. J. Murphy, Pennsylvania; first vice-president, L. M. Stewart, A. C. L.; second vice-president, George B. Usherwood, N. Y. C.; third vice-president, Kearn E. Fogerty, C. B. & Q.; fourth vice-president, Franklin T. Litz, C. M. & St. P.; fifth vice-president, Henry J. Raps, I. C.; secretary, Harry D. Vought, and treasurer, W. H. Laughridge, Hocking Valley.

Addresses Each Day

An important feature of each day's session was an address covering some phase of the important work of locomotive boiler construction and maintenance. H. T. Bentley, general superintendent of motive power, Chicago & North Western, stressed the necessity for the younger members of the industry to fit themselves for the responsibilities which will be theirs in the future. The future of locomotive advance is dependent on the way in which the new blood in the field is developed. All those who show aptitude and interest in their work,

which is trying at the very best, should be given encouragement and advancement as they become competent to handle more important phases of boiler or mechanical maintenance.

At the Wednesday morning meeting, J. E. Bjorkholm, assistant superintendent of motive power, Chicago, Milwaukee & St. Paul, discussed the responsibility of supervision and the manner in which members of the association, by taking advantage of their opportunities and by intelligent action in the conduct of their affairs, can add to the prestige of the roads for which they work. Mr. Bjorkholm characterized the successful boiler foreman of today as one whose worth is gauged by his ability to lead and who must be entirely familiar with all details of his department. "He must know the cost figures of labor as well as of material. He should know the time required to do a certain job, so as to be able to plan ahead accurately and schedule his work, thus insuring system instead of 'hit and miss' methods. He must be entirely conversant with all state and federal requirements relating to boilers and their appurtenances."

Treats of Boiler Department

A number of important features of the boiler department were mentioned in an address by George F. Hess, superintendent of motive power, Wabash, including the increasing use of auxiliaries and the problems of their design. The conservation of fuel is a matter for the boilermaker foreman to be familiar with and also ways in which his department can decrease fuel losses. In this connection Mr. Hess summed up the matter. "If they will see that air is excluded from the smokebox; that flues, particularly superheater flues, are kept tight and clean, and that the grates are in good condition, it will result in the saving of fuel." In preventing forest fires, the boiler maker has an important part to play by making all front end settings, draft plates and the like tight in order to keep the sparks in the front end.

Boiler pitting and corrosion was the subject of the discussion at the meeting Wednesday, May 4. F. N. Speller, metallurgical engineer of the National Tube Company, addressed the meeting, and D. A. Steel, *Railway Age*, read a paper on Water Treatment—Corrosion and Pitting, prepared by C. R. Knowles, superintendent water service, Illinois Central. Lantern slides were used to illustrate this paper. Among the service engineers who took part in the discussion of the subject of pitting and corrosion were R. C. Bardwell, C. & O., and R. E. Coughlan, C. & N. W.

For Standard Welding Practice

Recommendations for proposed standard welding practice as applied to locomotive boilers were submitted by the association during the past year to the Welding Committee of the American Railway Association, Mechanical Division. No further action is to be taken by the Master Boiler Makers' Association on the subject of fusion welding until the A.R.A. has formulated rules governing its use. The association committee, however, is to be continued to assist the A.R.A. committee on the subject in any possible way.

A special committee on Compiling Standard Names for Various Parts of Locomotive Boilers submitted the proposal to adopt the definitions contained in the Locomotive Cyclopedia, which proposal was adopted by the convention.

About sixty companies, members of the Master Boiler Makers' Supply Men's Association, held an interesting

and instructive exhibit of boiler shop tools and equipment for the benefit of the members of the Boiler Makers' Association.

Hearings on C. & O. Merger Plan Begun

WASHINGTON, D. C.

HEARINGS on the application of the Chesapeake & Ohio for authority from the Interstate Commerce Commission for the acquisition of control of the Erie and Pere Marquette by stock purchase and for the issue of \$59,502,400 of additional common stock were begun before C. D. Mahaffie of the commission's Bureau of Finance on May 10.

As in the case of the application of the Nickel Plate to acquire control of the C. & O., Erie and Pere Marquette, which was rejected by the commission last year, the present application is being opposed by a committee of minority stockholders of the Chesapeake & Ohio, who were represented at the hearing by Henry W. Anderson and Thomas B. Gay. Intervening petitions were also filed by a number of short line railroads, represented by Moultrie Hitt, the Prattsburg, the Arcade & Betsey River, the Mt. Jewett, Kinzua & Riterville, the Chicago, Attica & Southern and the New York & Pennsylvania, and also by the Detroit & Mackinac, the Big Sandy & Kentucky River and the Middletown & Unionville. The applicant was represented by Herbert Fitzpatrick, G. H. Gardiner, F. H. Ginn, C. C. McChord and R. G. Curry.

The first part of the hearing was devoted to the filing of statistical and accounting exhibits containing the basic data regarding the three roads and on cross-examination of the witnesses Mr. Anderson used tactics similar to those which resulted in dragging the hearings in the Nickel Plate case over a period of eight or nine months, by calling for the presentation of voluminous documents referred to by the witnesses, often in original form, and by insisting on cross-examining witnesses on matters outside their departments. Mr. Anderson also persists in using the German form of pronunciation of the name Van Sweringen, as distinguished from the way in which O. P. Van Sweringen himself pronounced it when he was on the stand. Mr. Anderson, however, postponed most of his cross-examination for a further examination of the numerous exhibits filed.

A. Trevvett, secretary and treasurer of the C. & O., presented extracts from the minutes of directors' meetings and similar records and Mr. Anderson asked him to file the original copies. E. M. Thomas, comptroller of the C. & O.; F. D. Hodgson, comptroller of the Hocking Valley; J. K. Thompson, assistant comptroller of the Erie, and C. S. Sikes, vice-president and comptroller of the Pere Marquette, presented and described accounting exhibits, and I. L. Pyle, assistant chief engineer of the C. & O., put in to the record a detailed description of the physical properties of the three roads.

W. C. Hull, assistant to the vice-president in charge of traffic of the C. & O., testified as to traffic aspects of the proposed merger, outlining the routes by which traffic of various kinds moves and emphasizing the need of the C. & O., for additional friendly outlets for its expanding traffic, particularly coal. Mr. Anderson asked if the routing of the traffic is not controlled by the shipper. Mr. Hull replied that the shipper routes traffic as directed by the consignee and that the influence of the solicitation of the Erie and Pere Marquette ought

to increase the movement of tonnage in a way that would give a long haul to the system lines.

When Mr. Anderson asked if a stock interest in the Erie would be sufficient to justify routing traffic to Chicago via Marion, O., and the Erie instead of by the C. & O.'s own line to Chicago, Mr. Hull replied that it would be, because the Chicago division is not adequate for heavy traffic.

W. J. Harahan, president of the C. & O., testified on May 11 regarding the history of the adoption of the present plan and the advantages he said would result from it. Following the commission's denial of the Nickel Plate plan, he said, there was a reorganization of the C. & O. board on March 17, 1926, at which two members of the committee representing the minority were elected and the representatives of the Nickel Plate company resigned. A special committee was then appointed to consider the situation and on June 25 it reported that it was unanimously agreed that the unification of the roads involved in the Nickel Plate plan was advisable, but as the committee had failed to agree upon the ratios of exchange for the stock of the respective roads the prior plan was entirely abandoned and the plan by which the C. & O. was to acquire stocks of the Erie and Pere Marquette was adopted as an alternative. On cross-examination Mr. Anderson brought out that the directors elected to succeed the Nickel Plate representatives were suggested by O. P. Van Sweringen.

After explaining the cost to the C. & O. of the Erie and Pere Marquette stock purchased or proposed to be acquired, Mr. Harahan gave an estimate of the net income of the Erie for the next five years amounting to \$8.20 per share on its common stock, which would be 22 per cent on the cost of that stock to the C. & O., and he estimated that the Pere Marquette would earn \$14.47.

Mr. Harahan said that the proposed control, as an intermediate step toward unification of the three properties, would be in the public interest because it would enable the roads to compete with the Baltimore & Ohio, New York Central and Pennsylvania systems and geographically the proposed system would form a close counterpart of those systems. The use of the Erie from Marion to Chicago, he said, would form the best physical route for the movement of coal from the southern bituminous fields, and whereas to improve the Chicago division of the C. & O., with better grades, etc., would cost \$34,000,000, control of the Erie could be bought for about \$42,000,000 and afford a return on the investment directly. He emphasized the statement that the Erie and Pere Marquette, originating little coal themselves, would broaden the markets for the coal produced on the C. & O., and he said that the Erie line from Marion to Chicago could handle a 100 per cent increase in traffic. The Pere Marquette, he said, dovetails into the C. & O.-Hocking Valley system as a logical extension of their lines and would perform the same function for the C. & O., as the Michigan lines of the New York Central and Pennsylvania systems do for those systems.

Discussing the short line question, Mr. Harahan said that the C. & O. had followed a liberal policy in that respect, as indicated by its recent acquisition of 14 connecting short lines and its pending application before the commission for another. He said it is difficult to establish a definite policy, because of the different conditions, but that it is willing to consider the acquisition of each individual short line in its territory if it deems it advisable for it to do so and is willing to leave to the Interstate Commerce Commission the determination as to which should be kept in operation and which it should acquire, the value to be determined by arbitration in event of failure to agree.

Fuel Association Holds Usual Constructive Meeting

Annual convention at Chicago addressed by Carl R. Gray and other nationally-known speakers

THE International Railway Fuel Association, which is growing each year in numbers and in influence on railroad operating efficiency, particularly with respect to the purchase, storage and use of railway fuel, held its usual constructive and inspirational annual convention at the Hotel Sherman, Chicago, May 10 to 13, inclusive. At this, the nineteenth meeting of the association, President E. E. Chapman, engineer of tests of the Atchison, Topeka & Santa Fe, presided, and the opening session was addressed by three nationally-known speakers including Carl R. Gray, president of the Union Pacific System; George Otis Smith, director of the United States Geological Survey, and Dr. H. Foster Bain, secretary of the American Institute of Mining and Metallurgical Engineers.

During the course of the convention other addresses were made by T. H. Williams, assistant general manager, Southern Pacific; N. B. Ballantine, assistant to the president of the Seaboard Air Line; L. K. Silcox, general superintendent of motive power, of the Chicago, Milwaukee & St. Paul; E. E. Regan, general superintendent of the New York, New Haven & Hartford; H. S. Rauch, division superintendent of motive power, New York Central; C. F. Richardson, director of the National Coal Association; A. E. Warren, general manager, Canadian National; C. B. Page, manager, Steammotors Company, and F. S. Wilcoxen, president, International Railway Supplymen's Association.

Thirteen committee reports were read and discussed in detail.

The grand ballroom of the Hotel Sherman was taxed to capacity at the initial session. In opening the convention, President Chapman called attention to the fact that the International Railway Fuel Association comprises within its membership representatives from nearly all ranks and departments of the steam railroads and emphasized the desirability of this feature since the conservation of fuel depends upon the whole railway organization rather than upon any individual group of men. The

fuel which can be used with least over-all cost, taking into consideration length of haul, with the least loss of time in turning locomotives at terminals, should be secured, every item bearing on the ultimate cost of fuel to the railways, being carefully analyzed before contracts are let. Mr. Chapman briefly reviewed the various important factors in the economical use of locomotive fuel and also pointed out that fuel, burned in other than locomotive service and representing from 10 to 14 per cent of the total fuel bill, presents probably the greatest problem which faces a fuel conservation program inasmuch as this fuel is used in so many small units difficult to supervise thoroughly.

Under the title, "What Price Distance," George Otis Smith, director of the United States Geological Survey, said that the conquest of distance is the big task set before railroad men, the number of ton-miles produced annually being the real measure of national prosperity. He said that the only way to conquer distance is to reduce the number of miles or cheapen the miles and that in the latter alternative rests the real opportunity of the International Railway Fuel Association through its influence and wide representation among railroad men.

Dr. H. Foster Bain, secretary of the American Institute of Mining and Metallurgical Engineers, pointed out that 30 per cent of the bituminous coal and 5 per cent of the anthracite coal mined in the United States is used by the railroads and that 52.7 per cent of the freight handled comes directly from mines. The community of interest between the railways and the coal mines as the source of railway fuel is, therefore, apparent. There is also a community of interest between the railroads and the whole mining industry as the source of most of the railway freight traffic. Mr. Bain said that railway dependence upon the mining industry in these two particulars is apparently a permanent one and that every effort should be made to stimulate research in the production of larger amounts of minerals from low-grade ores at a stable or, if possible, decreasing cost.

Address by Carl R. Gray

In his address, Mr. Gray pointed out that previous to the passage of the Transportation Act of 1920, few men even among railroad men themselves had visioned a dependable, efficient national system of transportation as required by the new law. Railroad men were individualists, loyal to their respective properties, but with little more than an academic interest in the difficulties of others. It has now been shown that one railroad cannot fall down in Maine without adversely affecting a railroad in California.

Concerning this changed attitude, Mr. Gray said, "As that conception grew on the part of the railroads, they began an effective system of co-operation, one which grew to such an extent that it was fair to say that over 2½ million freight cars in this country became a common possession, moved to meet the necessities of a situation

wherever or upon whatever line it might be. One of the most striking examples of this occurred last summer. One of the best and most efficiently managed railroads of the Southwest, a heavy wheat carrier, with a full knowledge that there was a large wheat crop in Kansas, had assembled on its line more cars than would ordinarily be expected to take care of the movement of that crop. Twelve thousand cars were parked on that line in the state of Kansas in anticipation of this crop. A new device had come into use on farms, a combined reaper and thresher, so that instead of going into the shocks, then into the stacks, and then through the separator, the wheat was threshed as it was cut, and hauled directly to the railroad station. This resulted in the dissipation of these 12,000 cars almost immediately and there was a car shortage. In the old days that would have been a con-

tinuing condition. None of the railroads would have taken notice of it, but their probable mental reaction would have been that it was that railroad's hard luck.

"In this situation, in 1926, practically every railroad in the country came immediately in play; cars were started by railroads everywhere for the relief of this carrier—railroads that had no hope of any participation in this business, all started their cars in that direction—and in a few days the situation on that road was relieved and the crops were moved without any difficulty whatever, owing to the realization on the part of all railroads that this is, after all, a national system of transportation.

"Mr. Gray explained how the railroad men have not only taken their difficulties to the public but have set for themselves high marks of operating efficiency, have exceeded these marks and exhibited a challenging faith in the future by investing in railroad properties more than three-quarters of a billion dollars a year since the war. Mr. Gray said, "Such a thing as a continuing car shortage, the kind that plagued the business world for generations is now unknown; congestion with all of its attendant difficulties and loss is a thing of the past. Railroad service has become so dependable that it has resulted in a reduction of business stocks and inventories, which, measured in dollars, staggers the imagination. It is estimated by men who follow such things that the reduction in stocks on hand and in transit totals between

seven and eight billion dollars. This means that capital in that amount has been changed from a frozen into an entirely liquid condition available for use in other channels. In my judgment, this is one of the reasons why credit has been so easy during the last half of the year."

In this connection Mr. Gray continued, "A man who has been compiling statistics about the amount of capital released through efficient railroad service, wrote me the other day and said: 'I dare not think what would happen, now that we have adjusted ourselves to these conditions, if the railroads should fall down.' I wrote him that he need not lose any sleep over this question because the railroads have found their feet and are operating together, and that he need have no doubt as to the efficiency of railroad transportation in the future."

Mr. Gray called attention to the changed attitude of the public as reflected in the press due to the publicity given to railroad difficulties and accomplishments which is also reflected in a more sympathetic and considerate attitude on the part of administrative and regulatory bodies. He paid a tribute to the Shippers' Regional Advisory Boards and closed his remarks by referring to the striking accomplishment of railroad men of all ranks in reducing the unit fuel consumption, as shown by the Bureau of Railway Economics, from 197 lb. per 1000 gross ton-miles in 1920 to 155 lb. in 1926, a reduction of 21 per cent, this saving being paralleled by proportionate savings in passenger service.

Economies in Long Locomotive Runs

By T. H. Williams

Assistant General Manager, Southern Pacific, Los Angeles, Cal.

In January, 1924, the Southern Pacific was operating six trains a day between Los Angeles, Cal., and El Paso, Tex., and two between Los Angeles and Tucson, Ariz.; that is, four trains per day in each direction.

Prior to the time we started to run our engines through, it required 40 locomotives to handle the eight trains, which included sufficient power to handle the pool of runs and to take care of relief work and the shopping of the engines.

These 40 locomotives consisted of Mikado, Pacific, ten wheeler and Atlantic types, being assigned as follows: Between Los Angeles, Cal., and Yuma, Ariz., a distance of 252 miles, we used the Mikado type. On two of these trains we used the Mikado engine between Los Angeles and Indio, a distance of 130 miles, and at Indio these engines were relieved by Pacific type power, the latter engines making the run from Indio to Yuma, a distance of 122 miles. At Yuma the ten-wheel engines were used for the run to Tucson, Ariz., a distance of 251 miles. At Tucson Mikado engines were placed on the trains for the run from Tucson to Lordsburg, a distance of 164 miles. At Lordsburg Pacific and Atlantic type engines were placed on the trains for the run to El Paso, Texas, a distance of 148 miles.

Trains were handled in this way prior to the time we started to run locomotives through between Los Angeles and El Paso, providing for five sets of locomotives and making four changes at intermediate terminals in the 815-mile run.

In January, 1924, we placed in service 10 Mountain type engines to run through and discounted cutting engines in and out of trains at all of these district and division terminals. Later, as more of the mountain type engines were received, we filled the pool with a complete complement of this class of power.

Today we are running 10 passenger trains per day, five in each direction between Los Angeles and El

Paso, and have 25 mountain type engines assigned to the through service. This is sufficient to take care of relief work and to provide for shopping.

For a long time we ran these engines without the protection of having an engine of this type at intermediate terminals to protect in case of engine failure, but recently we established the practice of changing one engine out at Tucson, Ariz., and one at Yuma, Arizona, on one westbound passenger train each day; this to give us an engine at these two points for protection in case of engine failure and to equalize the mileage made by the total engines employed in the pool.

To handle the 10 trains per day under the old method of operation of changing engines at district and division terminals, it would require 50 locomotives, while under our plan of running the engine through it requires 25 locomotives.

Since January, 1924, the date we started to run the engine through, we have constructed a new main line in Arizona from Wellton to Picacho, via Phoenix, which has added 44 miles to the run to El Paso and gives us a double track line between Wellton and Picacho.

We have also acquired the El Paso & Southwestern Railroad running from Tucson to El Paso, giving us a double track line between these two points and increasing our mileage via this route 29 miles in the total distance between El Paso and Los Angeles.

By the construction of the new line through Phoenix, the acquisition of the El Paso & Southwestern, and the scheduling of our trains over these new routes, we have increased the run of the Mountain type engines from 815 miles to 843 miles, 858 miles and 888 miles.

These engines after the run of 888 miles have an average layover at El Paso of 14½ hours and at Los Angeles, 26 hours. At both points we have modern shops.

These Mountain type engines, in the run of 888 miles,

take fuel at four points en route, but the tender has sufficient fuel capacity to take oil only twice en route. The reason for taking fuel four times is to save the long haul of oil to distant points from the oil fields. These engines make long runs for water, the longest run being 160 miles from Aqua, Ariz., to Picacho, Ariz.

We now come to the question of economies in long locomotive runs, which is the subject on which I was invited to address you.

First let us show what has become of the locomotives formerly employed, particularly the excess number of locomotives required to perform the service when they were working on short runs. The Mikado engines are hauling heavy freight trains on our Salt Lake and Rio Grande divisions. The ten-wheelers are hauling 100-car freight trains on the Stockton, San Joaquin, and other valley divisions. The Pacific and Atlantic type engines have been re-assigned to valley territory where best fitted for the needs of our business.

Six months after we started to run our engines through over this 815 mile territory, we took off round house forces at the intermediate terminals to the extent of saving us \$8,000 per month, or \$96,000 per year. It takes no stretch of imagination to know that it requires man power to move engines to sand house, oil and water columns, and to put them across the turntable and into the roundhouse. We have saved all such roundhouse attention and handling at these intermediate terminals.

In engine house fuel, prior to the time we started to run the engines through, we consumed 66 barrels of oil per day, which at the price we were then paying for oil, amounted to a saving of \$2,692 per month, or in round figures—\$32,000 per year.

We have made a substantial saving in cost per locomotive mile for classified repairs. The pool of 40 engines employed before we started the long locomotive runs averaged 76,943 miles per engine between shopping periods for classified repairs. Last year the pool of 25 Mountain type engines now running through made an average of 116,827 miles per engine between shopping periods for classified repairs, an increase of 50 per cent. Some of these engines are making over 14,000 miles per month.

The cost per locomotive mile for classified repairs on the pool of engines employed in the service before we started to run the engines through was 9.203 cents, and after running the engines through with a new type of engine assigned, the cost was reduced to 7.71 cents per locomotive mile, a decrease of 16 per cent. This decrease is due in part to less abuse of the Mountain type engine on account of their adaptability to work required over this territory as compared with former type of locomotive used.

The greatest factor of decreased cost per locomotive mile for classified repairs in my judgment is the saving of the metal of the boiler. We now cool the engine down once where we formerly cooled the engine four times.

In capital investment in this one pool of engines we have saved \$571,045 and with interest at 6 per cent and depreciation 4½ per cent, this gives us an annual saving of \$59,960 per year.

[Further proceedings of the convention will be published in next week's issue.—EDITOR.]

NUMBER PLATES on the front ends of 51 locomotives on the Eastern Region of the Pennsylvania, in the shape of a keystone, the railroad emblem, have replaced the circular style formerly employed.

Supply Officers Ready For Annual Meeting

PREPARATIONS are now practically complete for the annual meeting of Division VI, Purchases and Stores, A. R. A., which will be held this year in the Red Lacquer room of the new Palmer House, Chicago, on May 24, 25 and 26, under the direction of Chairman D. C. Curtis, chief purchasing officer, Chicago, Milwaukee & St. Paul; Vice-chairman A. S. McKelligon, general storekeeper, Southern Pacific, Coast Lines; and W. J. Farrell, secretary. Advance bulletins containing committee reports and special papers are being issued and addresses by an unusual number of prominent speakers have been scheduled. The program of the meeting follows:

CONVENTION PROGRAM

Tuesday, May 24, 1927

10 a.m. to 12:15 p.m., Daylight Saving Time

MORNING SESSION

	A. M.
Meeting called to order.....	10:00
Opening exercises	
Address by J. W. Waterman, superintendent timber preservation, C. B. & Q.....	10:20
Address by W. G. Besler, first vice-president, American Railway Association	10:35
Address by Chairman D. C. Curtis	10:50
Report of General Committee.....	11:05
Report on Forest Products.....	11:15
Address (speaker to be announced later).....	11:45

AFTERNOON SESSION

	P. M.
Paper on the Handling of Electrical Material.....	1:45
Report on Control of Shop Manufacturing Orders for Stock Material	2:00
Report on Budget Control of Material and Supplies Requirements	2:30
Address by Samuel O. Dunn, editor, <i>Railway Age</i>	3:00
Paper on Best Method of Educating Using Departments to Value of Materials and Supplies and Its Probable Economic Effect, by A. L. Hayden, traveling storekeeper, Southern Pacific, Texas and Louisiana Lines.....	3:15
Report on Unit Piling and Method of Pricing Materials..	3:45
Report on Purchasing Agent's Office Records and Office Organization	4:15

Wednesday, May 25, 1927

MORNING SESSION

	A. M.
Reading of prize-winning papers in contest on Material Handling	9:30
Report on Provisions for Uniform Observance of General Balance Sheet Account 716—Material and Supplies and Recommendations Governing Charges to Material Stores Expenses, Paragraph 16—Special Instructions, Operating Expenses	10:30
Paper on Line Stocks by K. P. Anderson, general material supervisor, Penna.	11:00
Report on Carrying Cost on Material and Supplies Investment	11:15
Address (speaker to be announced later).....	11:45

AFTERNOON SESSION

	P. M.
Paper on Reasons Why the Division of Purchases and Stores Should Control All Unapplied Material, by H. C. Pearce, director of purchases and stores, C. & O.....	1:45
Report on Recovery, Repairs and Reclamation of Discarded Material—Classification, Handling and Sale of Scrap	2:15
Report on Motorized and Unified Delivery of Materials..	3:00
Report on Standardization and Simplification of Store Stock and Disposition of Material Reaching Obsolescence	3:30
Report on Stores Department Safety Practice.....	4:00

Report on Uniform Methods Pertaining to Purchases of Equipment and Large Material Contracts and Vital Statistics Relating to Purchases..... 4:30

Thursday, May 26, 1927

MORNING SESSION

	A. M.
Paper on Price Index of Railroad Commodities, by James Deery, assistant to purchasing agent, Penna.....	9:30
Report on Fire Prevention.....	10:00
Report on Stores, Department Buildings and Facilities for Handling Materials.....	10:30
Report on Stationery and Printing.....	10:45
Report on Workable Rules for Carrying Out of the Provisions of Section 10—Clayton Anti-trust Act.....	11:30
Report of Joint Committee on Fuel Conservation.....	11:45
Closing business.....	12:00

Annual Meeting, U. S. Chamber of Commerce

WASHINGTON, D. C.

A RESOLUTION declaring that "If the Interstate Commerce Commission is to give competent and satisfactory service its membership must be kept on a high plane of intelligence, experience and courage in order that the independence and integrity of the commission may be protected," was adopted at a group meeting of the Transportation and Communication Section of the Chamber of Commerce of the United States at Washington on May 4, held in connection with the national meeting of the Chamber, but was referred by the resolutions committee to the board of directors with others for further investigation and study. The resolution also stated that "having announced by statute the standards by which rates are to be regulated, Congress should leave wholly to the commission the exercise of judgment in enforcing that standard."

As adopted by the group meeting this resolution contained only the more general language of a resolution proposed by the Railway Business Association and supported in a statement made at the meeting by Alba B. Johnson, president of that organization. The language of the proposed resolution which was not adopted, after an objection made by Julius H. Barnes, formerly president of the national chamber, because of some of the statements in it, was as follows:

"To this end the process of appointment must be safeguarded and the independence and integrity of the commission protected. Other things equal, nominees should be preferred who have had the experience and undergone the test of service on a state utilities commission. Representation of opinions, callings, interests, regions or states should have no bearing. Commissioners should come to their duties free from all obligations except national welfare and qualify in a personal, not a representative capacity. Upon expiration of terms commissioners should be reappointed during good conduct and health. The President and cabinet members should refrain from communicating to the commission or to commissioners their views upon rate adjustments pending or likely to be. Senators should refrain from attempts to exert influence upon the action of the commission or commissioners. In considering nominees senators should limit inquiries to ability, integrity and experience, omitting questions which would disclose opinions by which senators desire commissioners to be governed. . . . Public discussion of rate schedules or the economic theories underlying them being impracticable without implicating current concrete controversies, business and farm organizations should permit rate principles to evolve

as precedents in orderly procedure before the commission on issues joined."

Address of William J. Dean

William J. Dean, president of Nichols, Dean and Gregg, of St. Paul, Minn., presided over the group meeting, at which there was a series of five-minute talks on "New Trends in Transportation," by William L. Clause, chairman of the board of the Pittsburgh Plate Glass Company; A. J. Brousseau, president, Mack Trucks, Inc., and George D. Ogden, traffic manager of the Pennsylvania. Mr. Dean also addressed the general meeting on May 5 on "What's Ahead for Transportation and Communication," saying in part:

Since the operation of the railroads was restored to private ownership in March, 1920, there has been recorded a most amazing chapter of performance.

Private management during the past five years has demonstrated again the power of organized individual resource and ability to work miracles of performance when given freedom of action and a definite objective. The railroads as a whole, in terms of cars, locomotives, trackage, or terminal facilities, have not increased substantially during this five-year period; but the productive capacity in terms of ton-miles has increased at such an astonishing rate as to have changed the business habits of the nation and enabled the handling of a record traffic without friction.

The public has been better served; deliveries are more prompt and dependable, making a marked reduction in inventories possible; an era of good will toward the roads has been created, assisted by a growing public interest and participation in ownership.

Private management has demonstrated beyond any question a capacity to meet new conditions and problems with resourcefulness, ability, and courage, and to render a maximum service at a minimum cost.

Railroad Financing with Stocks

During the past five years the railroads have invested each year about \$850,000,000 of new money for improvements. It is estimated that in the coming years capital must be supplied at an equal or greater rate if these great arteries of commerce are to meet the ever expanding demands of traffic. Is this new money to be supplied mainly by continued issues of bonds as in the past or will the credit of the railways be restored sufficiently to enable them to finance improvements by issues of stock? This is a serious problem, for without a sound and stable financial condition they will be ill prepared to meet any adverse conditions.

The public welfare demands attention to these future problems of the railways—it calls for a sound and liberal policy of regulation affording full opportunity for initiative of management, realization of the program of permissible consolidation with proper regard for the public interest, continued improvement of plant and equipment taking advantage of the offerings of modern science, and every measure of efficiency and economy in operation.

In marked contrast to the progress of the railroads is the recent history of our merchant marine with the continual difficulties inherent in government ownership and with its enormous expense imposed upon the taxpayers. Losses in Fleet Corporation operation have aggregated \$233,000,000 since 1921 without including interest or depreciation. Some progress has been made in this period by the transfer to private ownership of certain lines and services. Recently, however, active efforts in this direction have been discontinued and proposals are even being put forward to have the government embark upon a further program of merchant ship construction. These are indications of an unsound policy against which we protest. We strongly advocate the maintenance under the American flag of the shipping services which are of such great value to the expansion of our foreign commerce, but we believe this should be done not by extending and perpetuating government ownership and operation but by measures which will establish our merchant fleet on a sound and permanent basis of private ownership.

Great as has been the progress in transportation in the past it is easy to conceive of even greater accomplishments in the future. But touched as they are in many different ways by the influence of governmental authority their further progress is peculiarly dependent upon a sound policy of those in power. So it is well that all who have the public interest at heart should be on guard—that the conditions which have made possible the great advances in the past shall be preserved so that the bright promise which they hold for the future may be realized.



Ability to Pay Stressed by Carriers in Western Wage Hearing

Presidents testify earnings will not bear increases and working hours have been shortened

THE ability of an employer to pay a wage is something to be considered when passing upon the question of what that wage shall be, according to the testimony of the carriers at the hearings at Chicago before a board of arbitration on the application of the Order of Railway Conductors and the Brotherhood of Railroad Trainmen for increases in pay of \$1 per day in western territory. The hearing before the arbitration board was started on April 27 with the testimony of the employees who based their demands on increased productivity and responsibility. (*Railway Age*, May 7, 1927, page 1395.) The carriers' witnesses who took the stand on May 9 when the employees rested their case showed that the earnings of the western roads are unable to bear the increases and that the increased productivity argued by the employees has inured to their benefit.

Employees Conclude Testimony

Before the carriers took the stand, representatives of the employees presented extended testimony giving unfavorable comparisons between their wages and those of skilled labor in other industries and showing the effect of increased productivity in retarding promotion of the men in the service. B. C. McDonald, a train baggage-man on the Chicago, Milwaukee & St. Paul, testified that he handles from 126 to 270 sacks of United States mail and parcel post and 400 to 800 cans of cream per trip. L. B. Truax, a brakeman on the Chicago, Rock Island & Pacific, said that he was employed as a brakeman on November 17, 1906, promoted to a conductor on March 11, 1912, was used on the conductors' extra board for a period of one month in 1913, and was not again assigned to the extra board of conductors until the summer of 1925, at which time he served as an extra conductor for a period of two months. He was again assigned to the conductors' extra board for a period of three months in the summer of 1926. Another man, he added, was employed as a brakeman on November 24, 1906, but was not promoted to a conductor until April 1, 1918, and was not used on the conductors' extra board until June, 1926, when he worked as a conductor for a period of about 30 days.

During the direct examination of P. F. Reidy, general chairman of the Brotherhood of Railroad Trainmen on

the Spokane, Portland & Seattle, who was testifying on statements made by other employees as to the compensation they received, Mr. Scandrett called attention to the position in which the carriers were placed as the witness could not be cross-examined on these facts. The chairman suggested that the carriers check the statements from the carriers' records, but Mr. Scandrett replied that this would require the calling of a witness by the carriers. Mr. Doak called attention to the fact that the employees have no access to the records of the carriers and a strenuous objection had been made by the conference committee for the carriers when the employees attempted to secure data from the company's files. He said he would desist if called upon to do so but would file the same objection to statements made by any representatives of the carriers because they have no personal information. Mr. Scandrett's remarks were not an objection and the examination continued.

J. H. Wilger, a freight brakeman on the Great Northern, testified that he entered the employ of that company on August 23, 1916, worked extra $1\frac{1}{2}$ years before he was entitled to a regular job, held the latter six years and was then reduced to the extra board. In 1924 he was on the extra board one month and fifteen days and was cut off the board entirely for a period of 30 days. He worked regularly for nine months and fifteen days in 1924 and eight months and six days in 1925. In the latter year he was on the extra board two months and ten days and was cut off the board entirely for one month and fifteen days. In 1926 he worked regularly six months and five days and worked extra five months and twenty-five days. He said there are 20 men ahead of him and it will be approximately 12 years before he is promoted, at which time he will have been a brakeman for 22 years. The youngest conductor on his division holding a regular position has 18 years' seniority.

Rates of Pay Compared with Those of Industries

C. H. Smith, chairman of the general committee for the Brotherhood of Railroad Trainmen of the Texas & Pacific, presented statistical data taken from the reports of the Bureau of Labor Statistics of the United States Department of Labor, the purpose of which was to show that the wages of conductors and trainmen are low as compared with the general wage levels. Mr. Smith

compared the rates of pay for conductors and brakemen in through and local freight service in the western territory with those of the same class of employees in the eastern and southern as shown in Table I.

Table I—Wages of Conductors and Trainmen Per Day or 100 Miles

	1913 Through freight conductors	1913 Through freight brakemen	1913 Local freight conductors	1913 Local freight brakemen
Eastern	\$4.00	\$2.67	\$4.50	\$3.00
Southern	4.10	2.75	4.50	3.00
Western	4.18	2.78	*4.82	†3.21

*1919.

†1917.

He said the daily standard rates have increased since 1913 as shown in Table II.

Table II—Daily Standard Rate Increase Since 1913

	Western	*Eastern	Difference
Through freight conductors.....	\$1.98 per day	\$2.62 per day	\$0.64
Local freight conductors.....	1.86 per day	2.68 per day	0.82
Through freight brakemen.....	2.06 per day	2.53 per day	0.47
Local freight brakemen.....	2.03 per day	2.63 per day	0.60

*Includes 7½ per cent increase just received.

Table III—Wages of Industrial Trades Per Day

	1913	1917	1926
Bakers	\$2.67	\$3.12	\$7.40
Bricklayers	5.54	5.93	12.52
Bricklayers, sewer, tunnel and caisson....	7.69	7.92	15.31
Building laborers.....	2.67	3.12	6.81
Carpenters	4.25	4.89	10.14
Carpenters, parquetry floor.....	4.54	5.27	11.51
Cement finishers.....	4.65	5.07	10.57
Cement finishers' helpers.....	2.88	3.05	8.30
Engineers, portable and hoisting.....	4.92	5.31	10.69
Hod carriers.....	2.93	3.43	8.02
Inside wiremen.....	4.39	5.00	10.71
Inside wiremen, fixture hangers.....	4.15	4.90	9.73
Marble setters.....	5.35	5.51	11.37
Marble setters' helpers.....	3.23	3.46	7.97
Painters	4.06	4.75	10.44
Fresco painters.....	4.36	5.15	9.59
Sign painters.....	5.08	5.43	12.18
Plasterers	5.39	5.82	12.76
Plasterers' laborers.....	3.28	3.68	8.46
Plumbers and gas fitters.....	4.97	5.31	11.05
Sheet metal workers.....	4.21	4.71	10.33
Steamfitters	4.78	5.26	11.01
Steamfitters' helpers.....	2.50	2.83	7.25
Stone masons.....	4.88	5.36	12.36
Structural iron workers.....	4.96	5.46	10.86
Structural iron workers' finishers.....	4.98	5.43	10.98
Tile layers.....	5.25	5.67	11.11
Tile layers' helpers.....	2.88	3.19	7.74
Average for building trades.....	4.12	4.65	10.22

He stated further that through freight conductors have received \$4.12 less per day, or per 100 miles, local freight conductors \$4.24 less, through freight brakemen \$4.04 and local freight brakemen \$4.07 less than the average increases for the building trades between 1913 and 1926. Through freight conductors have received \$3.59, local freight conductors \$3.71, through freight brakemen \$3.51 and local freight brakemen \$3.54 less in increases between 1917 and 1926 than the average increases the building trades have received during this period. If the increases requested in these proceedings were granted in full, through freight conductors would be \$2.94, local freight conductors \$3.18, through freight brakemen \$3.04 and local freight brakemen \$3.07 behind in increases compared with the increases granted the average for the building trades between 1913 and 1926. If the increases were granted through freight conductors and brakemen and local freight conductors and brakemen equal to the average advance in the building trades, through freight conductors would have to be increased \$2.41, local freight conductors \$2.65, through freight brakemen \$2.51, and local freight brakemen \$2.54 more than the requested increases per day.

Operating Statistics Given by Employees

J. H. Evans, statistician for the Order of Railway Conductors, presented data on operating results which showed that increased efficiency resulted in decreased employment. The number of locomotives in the western region decreased 500 between 1922 and 1927, the

freight train miles increased 700,000, the loaded and empty car-miles increased 185 million, while the gross ton-miles including locomotives and tenders increased 8 billion between 1921 and 1927. The net ton-miles, revenue and non-revenue, in the western region increased 3,000 million between 1921 and 1927, the revenue tons carried increased 10 million and the revenue tons carried one mile increased 2,600 million.

From 1923 to 1927 there has been a decrease of 800 conductors in the western region. The overtime decreased \$180,000 and the total compensation, \$250,000 during the same period. The average number of miles made by each conductor was 2,271 in January, 1926, and 2,213 in 1927. For the month of April, 1924, the average compensation received by freight conductors was \$229, in April, 1925, \$227 and in April, 1926, \$230.

Charles Donnelly Testifies

Charles Donnelly, president of the Northern Pacific, testified on Monday that the granting of the increase demanded would cost his road approximately \$500,000 per year for these classes of employees alone, while other classes of employees are demanding increases approximating \$2,750,000. The granting of these increases would deplete seriously a return already totally inadequate. The net railway operating income of the company in 1926, he said, was \$24,213,700 and represented a return of 4.05 per cent on an investment of \$597,754,756, the best result for any year since the war. According to the tentative report of the Interstate Commerce Commission, the value of those properties on June 30, 1917, was \$415,255,915, which the company thinks much too low and which it has protested. If this figure is used and to it added the amount expended for additions and betterments between 1917 and December 31, 1926, the net return earned amounted to but 4.77 per cent in 1926. The net railway operating income in 1926, the best year since the war, fell short by more than five million dollars of producing the return of 5¼ per cent upon this value.

"The net railway operating income for the Northern Pacific for the first three months of 1927," he continued, "is about \$1,000,000 less than it was for the same period in 1926. While at the present time the outlook for good crops is favorable, we cannot expect that our gross revenues for the year 1927 will exceed, if indeed they equal, the gross revenues of 1926. On the other hand, we estimate that expenses and taxes will exceed those of 1926, and that our net railway operating income in 1927 will fall below that of 1926, on the basis even of the present wage scale.

"Like other western railroads we have expended in the past few years large sums of money in the installation of devices whose effect is to reduce the hazards of employment, and in maintaining our plan of group insurance and pensions and kindred benefits to employees we expend annually more than \$500,000.

"In recognition of the diminished value of the dollar, these employees are now receiving in wages \$1.60 for every dollar which they received in 1917, while the owners of the property must be content to receive only 71 cents for every dollar which they received in 1917. The owners of the Northern Pacific are faring as well as the owners of any and better than the owners of most of the railroad mileage of the northwest."

Mr. Donnelly also testified, that in 1916 this road had a total of 28,899 employees and that the payroll amounted to \$28,204,000, while the employees receiving that compensation produced a total of 8,753,000,000 revenue ton-miles. In 1917 the number of employees had increased to 31,887, the payroll to \$35,877,000, and the ton-miles to 10,000,000,000. In 1918 the number of employees increased to 32,203, the payroll to \$49,000,000, and the ton-miles to 10,730,000,000. In 1919 the number of employees increased to 33,649, the payroll to \$52,000,000 and the ton-miles dropped to 8,639,000,000. In 1920 there were 35,553 employees, the payroll was \$66,-

000,000 and the ton-miles totaled 9,061,000,000. In 1921 the number of employees was 28,000, the payroll \$50,000,000 and the ton-miles 6,229,000,000.

In 1916 the 2,175 employees in the freight train service including the employees concerned in these proceedings, the enginemen and firemen, each produced 8,630,000 gross ton-miles while in 1917, 2,766 employees each produced 7,359,000 gross ton-miles. In 1918 there were 2,811 employees and 7,412,000 gross ton-miles; in 1919, 2,570 employees and 6,821,000 gross ton-miles and in 1920, 2,587 employees and 7,027,000 gross ton-miles. In 1921 the average gross ton-miles per employee was 6,542,000; in 1922, 6,952,000; in 1923, 7,382,000; in 1924, 7,724,000; in 1925, 8,264,000; and in 1926, 8,439,000 which is nearly as much as the amount in 1916.

"I believe that the increase in the eastern and southern territory is not a reason for authorizing the allowance here. The ability of an employer to pay a wage is certainly something to be considered when passing upon the question of what that wage shall be. With the western lines facing the conditions which they are now facing, with agriculture in its present condition, with these lines recognizing the practical impossibility of obtaining relief at this juncture by increases in the rates applying to agricultural traffic, it should be determined whether a cycle of wage increases to railroad employees should be entered upon in our territory and whether that cycle should start with the allowances of these increases to those classes of employees whose compensation already stands the highest when measured by the increases authorized in 1920."

At this point Mr. Sheppard protested, stating that in the eastern arbitration proceedings the carriers made no issue as to their ability to pay. He also asked that this entire proceeding be set aside should either side want to contest the award which the board may hand down. Mr. Doak said that neither the question of freight rates nor the question of ability or inability of a carrier to pay is before the board.

Mr. Scandrett interposed, saying that the conductors and trainmen are pressing this demand on increased productivity measured in the weight of the trains, the tonnage per train mile and in the increased rate of speed of the trains. But the increased speed has resulted in shorter working hours or increased compensation for the same number of hours of work. "The testimony of the carriers' witnesses," he said, "is to show that notwithstanding this increased productivity the carriers are not now and have not for years received any commensurate profits out of that increased productivity, that they have spent large sums on their properties and have yet to earn a fair return not only on the original sum but on the total with this increase. The railroads serving the western territory because of the economic conditions in this territory, have been repeatedly required to reduce the charges that they make for transportation. These men have not been called upon to share with capital, that sacrifice that capital has had to make to this economic condition. They have had but a 5 per cent reduction in wages and they are obtaining dollars now which purchase much more than the dollar purchased when they received the peak scale. It is true that if you are a partner in prosperity you should be a partner in adversity."

Following this controversy, the board ruled that it will not place restrictions upon what either side wishes to offer. After the record is complete the board will give it and each portion of it such consideration as in the board's judgment is right and proper.

Conditions on C. & E. I.

On Tuesday T. C. Powell, president of the Chicago & Eastern Illinois, testified that since his road was operated at a deficit of \$777,500 in 1924 and \$53,285 in 1925, and showed a net of only \$418,905 in 1926, when the country generally was prosperous, that road is not

able to pay, in any department, any higher scale of wages than is now being paid. The receivers who operated the road from May 27, 1913, to December 31, 1921, he said, spent large sums of money in improving the roadbed and bridges and enlarging the shops, besides constructing new shop buildings, with the expectation of promoting safety and efficiency in operation. The new company has, in the last five years, supplemented the work done during the receivership and has, through these additional expenditures, made greater provision for the convenience of the employees and has reduced the hazard of employment by installing automatic train control in addition to the automatic block signals with which the road is also largely equipped. The sum total of these expenditures from January 1, 1922, to December 31, 1926, amounted to more than four-and-a-quarter million dollars.

In spite of these expenditures and in spite of the improvement of the property, looking to more economical operation, the Chicago & Eastern Illinois, under present conditions of rates, taxes, wages and other operating expenses, during the past five years has paid no dividends and has been able to earn an average net income after charges of only \$260,000, which is less than six-tenths of one per cent on its outstanding capital stock. "The pay checks," he continued, "show that the men working for the Chicago & Eastern Illinois are receiving a fair, and, in some cases, a liberal return. By whatever calculation the remuneration is figured, the actual money paid is the expense incurred by the company and represents the actual money received by the employees."

He also stated that there is today a very narrow margin between the revenue received for operating freight and passenger trains and the actual cost of operating such trains. A number of local passenger trains have been discontinued because the out-of-pocket costs exceeded the revenue received from the passengers. On freight traffic, the revenue is sometimes so low that under his direction the traffic department has ceased soliciting such classes of business.

Effect on Milwaukee Reorganization Plan

H. E. Byrain, receiver of the Chicago, Milwaukee & St. Paul, said there is no justification for extending to the western railways the $7\frac{1}{2}$ per cent wage increase granted to the conductors, trainmen and yardmen of the eastern and southern lines. In 1916 the gross earnings of the western lines were sufficient to pay all operating costs and to yield a return of 5.72 per cent upon the amount of money invested in their properties. From that year on, however, the increase in costs has always been ahead of the increase in the average rate charged per traffic unit for transportation, the peak being reached in 1921, when the unit cost per traffic unit (including a fair return on investment) had increased 82 per cent over 1916 while the unit rate or charge had increased only 64 per cent in the same time.

In 1922, reductions in expenses had decreased the unit cost from 82 per cent above 1916 to 67 per cent, which nearly corresponded with the percentage of increase in the unit charge in 1921 of 64 per cent. However, just as in the upward trend the cost kept ahead of the increase in the average rate, so in the downward trend decreases made in rates were ahead of reductions in costs. Reductions in rates made since September, 1921, on the present level of business, have reduced the revenues of the Milwaukee a little over \$20,000,000 a year.

In 1926, the unit cost of doing business, for the western railways, had increased 51 per cent over 1916, whereas the increase in the average rate or charge for transportation had been only 42 per cent. In that year the rate of return on investment of the western lines was

4.4 per cent, which was the maximum since 1917. In no year have the earnings of our western lines reached the "fair return" level contemplated by the Transportation Act. In strong contrast to this western situation, the normal or proper relationship between unit costs and unit rates has been re-established in the Eastern and Southern districts, the rate of return earned by those roads on their property investment amounting to 5.62 per cent in 1926.

In 1916 the cost to the company in wages paid to these employees was 17 cents per train mile and in 1926 it was 34 cents. This class of employee now works less hours per day than in 1916 and is paid double for the work performed. In addition, the majority have a guaranteed job and, on many roads, a pension when they become too old for service. He also stated that the increased efficiency in the operation of the Milwaukee has been almost entirely due to the heavy investments made in the property, which in the past ten years have been in excess of \$177,000,000. In the case of the Milwaukee, there are no profits and as long as there is a situation where they are receiving a fair wage while the owners of the property are not receiving a fair return, there can be no foundation for a division of profits.

If the train service employees now before this board are granted a 7½ per cent increase, it will increase the Milwaukee's payroll \$960,000 annually. If firemen and other employees are given a five per cent increase the payroll of the Milwaukee would be increased by a total of \$4,500,000 yearly. This, it will be seen, would wipe out all but \$500,000 of the earnings in excess of fixed charges under the reorganization plan.

Estimated Cost to D. & R. G. W.

J. S. Pyeatt, president of the Denver & Rio Grande Western, testified that the granting of any general wage increase to these men, with its probable extension to other classes of railway employees, and without a compensatory increase in the rates received for transportation, can only result disastrously to the adequate and dependable character of service now being generally furnished by the railroad systems of the west. If generally increased wage rates are again to prevail, and the additional capital outlay which has produced the present satisfactory transportation machines continues to receive a decreasing rate of return, further improvements and additions to roadway and equipment cannot be undertaken, curtailment of service will inevitably follow, and the present seriously impaired credit of a very large part of the mileage of western railroads will become exhausted.

He estimated the annual cost to the Denver & Rio Grande Western of a 7½ per cent wage increase to its conductors, trainmen and yardmen as \$190,000. If the same increase were granted to other classes of employees, the total result would be an annual increase of \$1,258,000 in the annual payroll. To offset this increase in the annual wage bill an increase in freight rates of about five per cent would be required.

L. E. Wettling Contrasts

Earnings of East, South and West

On Wednesday, L. E. Wettling, manager of the statistical bureau of the western lines, testified that the western carriers failed to earn 5¾ per cent in 1926 on two and one-half billion dollars of their property investment of ten billion dollars, while the railways in the east earned a return of 5¾ per cent on all but \$450,000,000 of their property investment, and the carriers in the south earned such a return on \$341,000,000 more than their total investment. The actual net earnings of the western lines in 1926 were

\$445,000,000 and to have received a return of 5¾ per cent on their total investment would have required net earnings in that year amounting to \$587,000,000. Their shortage below this total was \$142,000,000, which is approximately equivalent to a return of 5¾ per cent on two and one-half billion dollars. On this same basis the investment of the western roads upon which no return was earned, ranged from two and one-half billion to over four billion dollars in the last six years. From 1916 to 1926 the property investment of the western lines increased more than two billion dollars. To earn in 1926 a return of 5¾ per cent upon this increase in investment, their net earnings should have increased \$120,000,000 during this period. The actual increase which occurred in earnings, however, was only \$43,000,000.

As a consequence the western lines failed to earn 5¾ per cent on one and three-tenths billion dollars of their increase in property investment. The eastern roads, on the other hand, earned 5¾ per cent on all but \$24,000,000 of their increase in investment, while the southern roads earned 5¾ per cent on \$668,000,000 more than their increase in investment. Comparing 1926 with the test period, he said the investment per mile of road for the western lines has increased 26 per cent, while net earnings per mile of road have increased but 8 per cent. On the per mile basis, the investment of the eastern roads has increased 43 per cent and net earnings have increased 45 per cent, while in the south the investment per mile has increased 49 per cent and net earnings have increased 75 per cent. The figures regarding the railway companies in the hands of receivers in the various districts show this same variation in conditions. In 1926 the mileage in receivership amounted to 14,760 miles in the west, 211 miles in the east, and 640 miles in the south.

A. F. Cleveland Testifies on Freight Rates

A. F. Cleveland, assistant freight traffic manager of the Chicago & North Western, testified that the general level of freight rates, as measured by the average amount received by the roads for carrying a ton of freight one mile, is now 35 per cent above the 1915 level for the western roads, 41 per cent above 1915 for the southern roads, and 70 per cent above 1915 for the eastern roads. A similar situation, he said, holds true as regards the general level of passenger fares as measured by the average receipts per passenger mile. On this basis passenger fares in the west are now 44 per cent higher than in 1915, while in the east they are 51 per cent higher, and in the south 56 per cent higher. If the Western lines had suffered only a general 10 per cent reduction in rates, as was the case in the rest of the country, they would in the last four years have received in freight revenues the sum of \$430,000,000 more than was actually paid them. In 1926 alone, they would have received \$138,000,000 more freight revenues than were actually paid them, and this additional amount, if it had been received, would have brought their total net earnings up to a return of 5¾ per cent upon their aggregate investment.

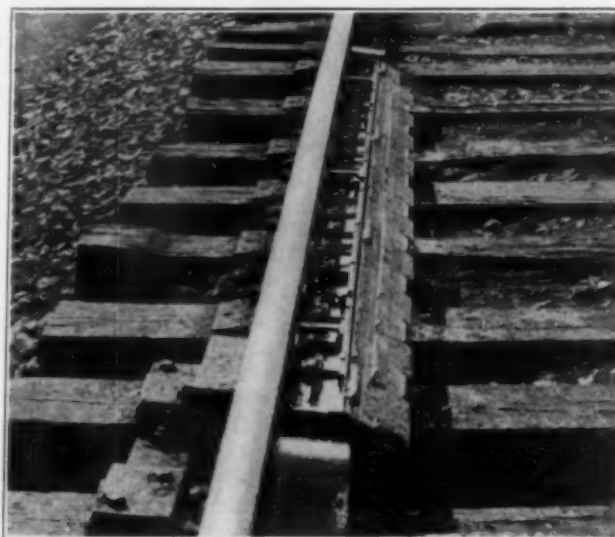
IN OPERATION since Confederation, 60 years ago, the Welland Railway, one of the oldest steam roads in Ontario and the shortest connecting link between Lake Ontario and Lake Erie, has ceased to carry passengers, mail and express under an order issued by the Canadian National which took over the line when it absorbed the former Grand Trunk System. The railway has been in operation between Merriton and Port Colborne since the cancellation of the direct Port Dalhousie-Port Colborne run (lake to lake), and the electrification of the St. Catharines-Port Dalhousie section. Electric lines of the Toronto, Niagara and St. Catharines Railways will take over the service.

Oiling Reduces Rail and Flange Wear 80 Per Cent

*Experiments on Norfolk & Western produce marked results
and lead to new oil applying device*

CONFRONTED with excessive rail wear on curves, the Norfolk and Western has given much study to the oiling of the flange-wearing surfaces of the rails, with a resultant increase of about 400 per cent in the life of rails in these locations. This problem, which has existed to a greater or less extent at every curve, has been particularly severe on the Radford division which crosses the Allegheny mountains between Roanoke and Bluefield, Va. On this territory the curvature ranges from 3 deg. to 12 deg. through a distance of 100 miles, and on two mountain grades 65 per cent of the track is on curves, varying from 6 deg. to 12 deg. The maximum super-elevation on these curves is 5 in. and the maximum grades on the eastbound track, over which an average of 70,000 tons is moved daily, are 1.3 per cent ascending and 1.6 per cent descending. So severe were the conditions in this territory that the average life of 130-lb. rails on the high sides of 10 deg. to 12 deg. curves has been only 2 to 3 years. The life of the rails on the low sides of curves has been usually about 50 per cent longer than on the high sides.

Confronted with this situation the Norfolk and Western began experimenting about two years ago with the application of oil to the inside of the heads of the rails on the high sides of curves. At first the oil was applied to the rails by section men with short stub paint brushes at intervals of about 12 in. over a distance of 10 to 12



The Flange Oiler with the Cover Removed, Showing the Discs Partially Submerged in the Oil

rail lengths on two curves in opposite directions, care being taken to keep the oil from the tops of the heads where it would interfere with traction. With rails so oiled, it was found that the oil was picked up by both the right and left wheel flanges of passing trains and was distributed by them wherever the flanges were thrown against the rails for distances ranging from 3 to 12 miles. Thus, one application was found sufficient to oil adequately the flange-wearing surfaces of the rails on a number of succeeding curves. The tests made were so successful in minimizing the amount of rail wear that the practice of oiling the rails, as outlined, was extended to all other portions of the Norfolk and Western where the curvature and resultant rail wear justified its use.

Mechanical Methods of Applying Oil

While the practice of oiling the rails proved sound, it was evident that in order to make it entirely practical, the slow and costly hand method of applying the oil would have to give way to mechanical means. In the first place application of the oil with the brush was wasteful in the amount of oil used, and in the second place it required the employment of three men on eight-hour shifts at each lubricating point in order that the oil could be applied immediately following each tonnage train throughout the day and night. These men were assigned specially to this work, except where it was possible to locate the oiling points appropriately and turn the work over to regularly assigned bluff and tunnel watchmen. Where special men were assigned, which was the usual case, approximately 90 per cent of the total cost of oiling the rails was for labor, with only about 10 per cent for oil and the brushes used in applying it.

With this high labor cost it was soon evident that it was necessary to find a more practical and economical



As the Flange Oiler is Installed in Track

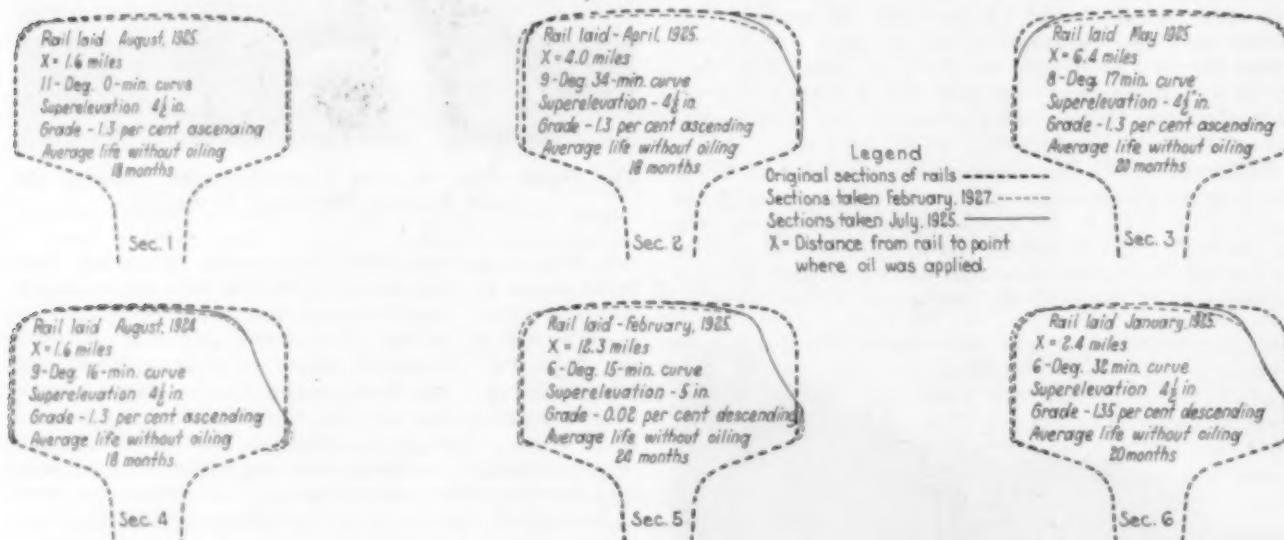
means of applying the oil exactly where it was needed. To this end, some of the section men assigned to oiling the rails by hand, devised contrivances, with the encouragement of the company, which could be pushed by hand so that the rails were oiled as fast as the operator could walk. One of the most successful of these was a simple metal container mounted on a low carriage with double-flanged rollers, which could be pushed along the rails by means of handles. In this arrangement, after the oiling mixture was heated, it flows through a short pipe, equipped with a suitable regulating valve, to the top of a brush which distributes it along the gage side of the rail heads.

Most of these methods were an improvement over the hand application of the oil and effected some saving in oil, but the labor cost still remained high. This brought about the feeling that the solution of the problem lay in devising a means of applying the oil directly to the wheel flanges instead of to the rail. Acting on this principal, continued study of the subject led to the development of two or three automatic flange-oiling machines of considerable merit. All of these are designed to be installed within the track, close to the gage side of the rail where passing wheel flanges can pick up a correct amount of oil and carry it to the curves ahead.

One of these machines is a metal box-like oil con-

tainer which is rigidly bolted and spiked to the gage side of the rail. This box has a hinged section along the top which is depressed under the action of the wheel flanges of passing trains, opening the top of the oil container and acting against a lever in the bottom of the box, which in turn raises the oil sufficiently to coat a rubber wiper which comes in contact with the side of the rail head and the wheel flanges.

In accomplishing this, all of the disc shafts are fitted with fixed sprockets which are driven in synchronism by means of a continuous roller chain operating alternately over the sprockets and under idler shafts spaced between them. Driving of the chain is effected by means of a ratchet and pawl mechanism on a drive shaft at one end of the box through which the relative vertical motion between the rail and the ties at this point is transformed into a rotary motion of the ratchet and shaft. In this arrangement the drive shaft extends through the oil box and the web of the rail, and the end is fitted with a fixed ratchet wheel. Operation of this wheel is by means of two pawls, supported by a steel bracket which is fastened securely to two adjacent ties outside of the rail by lag screws. These pawls, which are hung in the plane of the wheel and held against it by means of springs, rack the wheel in a clock-wise direction by means of the relative motion between the rail and the ties under moving loads, sufficient motion of this character being provided by drawing the spikes slightly from the two supporting ties. In this manner, rotary motion is transmitted to the drive shaft and thence, by means of



Sections of Rail Showing the Small Amount of Wear After the Flange Oilers Were Placed in Service

tainer which is rigidly bolted and spiked to the gage side of the rail. This box has a hinged section along the top which is depressed under the action of the wheel flanges of passing trains, opening the top of the oil container and acting against a lever in the bottom of the box, which in turn raises the oil sufficiently to coat a rubber wiper which comes in contact with the side of the rail head and the wheel flanges.

Derrick Rail and Flange Lubricator

While several machines of this general character were tried out with considerable success, the most practical and successful machine devised was designed by J. R. Derrick, assistant superintendent of the Radford division. This machine consists of a covered metal box or trough, 10 ft. 3 in. long by 5 in. wide and 4 in. high, which is bolted to the web of the rail on the gage side. Within this box is a series of 10 leather discs, 5 in. in diameter, equally spaced throughout the box and mounted in a vertical position on suitable cross shafts. In operation,

the chain and sprockets, to each of the oiling discs.

This machine is installed at the center or quarter points of a rail, preferably about 100 ft. ahead of a curve, and in all cases is accompanied by the installation of a guard rail immediately opposite. The function of the guard rail is to prevent the crushing of the oiling discs between the flanges of passing wheels and the head of the high rail and also to prevent the lateral motion of engine and car wheels, thereby retaining their flanges in the desired contact with the oiling discs.

The oil used in this device is a heavy, sticky and viscous oil, now obtainable from the oil companies in the proper consistencies for summer and winter use. The oil consumption of the machine is dependent directly upon the amount of traffic, the usual consumption of those machines in service having been from about one-half gallon to one gallon per day.

The Derrick rail and flange lubricator, is now being manufactured and sold by the Maintenance Equipment Company, Chicago.

Oiling Greatly Increases Rail Life

The advantages which have been obtained on the Norfolk and Western through flange and rail oiling by the various methods described, have been very definite, the most important of these being the striking reduction in the wear of the rails on curves and the corresponding increase in the service life of these rails, which in most cases has been extended approximately four times. That such unusual results have and are being accomplished in this respect, is evidenced by the accompanying sketches of 130-lb. P. S. rail sections made from actual measurements taken in the track.

These sketches show the original sections of the rails as laid new; the sections of these rails after from 3 to 11 months' service without oiling; and also, sections of these same rails about 19 months after oiling was begun. In the last five of these sections, which are typical of the results being obtained on the Norfolk and Western, the excessive rail wear on the gage side of the rail heads in the few months previous to oiling is shown, as well as the almost negligible increase in the amount of this wear in the 19 months immediately following the oiling. In rail section No. 1, which was laid shortly after oiling was begun, is indicated also the almost inappreciable amount of flange wear on new rails which have been oiled after 18 months' service, and this, in this case, in spite of the fact that the rail was located on an 11 deg. curve.

Important also, as indicated by the notes accompanying each rail section, is the apparent effectiveness with which the oil is carried to great distances from the point of application, this distance, in the case of section 5, being over 12 miles. Irrespective of this distance from the point of application, the oil was applied so thoroughly that the excessive flange wear which occurred in the 4 months previous to oiling, was completely stopped in the 19 months during which oil was applied. Evidenced that the oil is properly applied and does not reach the top surface of the rail heads, is seen in each case by the fact that whereas side wear was almost stopped, wear on the top of the rail heads continued at the normal rate.

While the accompanying sketches are conclusive as to the actual results being accomplished in the way of lengthening the life of rails on curves by oiling, and indicate indirectly the large savings being made in the cost of rail renewals, to this, in order to get the total savings effected, should be added the labor cost formerly required for the frequent renewal of rails on curves; the labor cost of the frequent regaging of the tracks on curves formerly required due to rail wear; the former loss through the damage to ties caused by frequent respiking to gage; the saving through the longer service life given to engine and car wheels; and the less easily computed but no less real saving that is being effected through the acceleration of train movements made possible by decreased friction on curves.

SOUTHERN.—Extensive improvements going on along the line of the Memphis division between Chattanooga, Tenn., and Memphis, 314 miles, will probably all be finished and in use by August 1, next. During the last two years, four important bridges have been strengthened or rebuilt and 85-lb. rails have been laid on 148 miles of track, these improvements making possible the use of Mikado type locomotives on freight trains throughout the division. Four new passing tracks have been built and 21 others have been lengthened. Automatic block signals, with automatic train control, are being installed between Stevenson, Ala., and Memphis, 275 miles, and a telephone line is being put up the whole length of the division.

Taxes of Southern in Kentucky Held Excessive

THE United States Supreme Court has reversed judgment against the Southern Railway for franchise taxes imposed under the Kentucky laws, on a system basis, in respect of its lines in that state, 204 Ky. 388. Under the Kentucky statutes, §§4077-4081, where the railroad is partly within and partly without the state, the value of the intangible property to be taxed is determined as follows: capitalize the net railway operating income of the entire system for the accounting year last ended; assign to Kentucky its mileage proportion of that amount; deduct the assessed value of the tangible property otherwise taxed; and the remainder is the value taken as the basis for the franchise taxes. The Southern does not own any railroad in Kentucky, but it controls the Cincinnati, New Orleans & Texas Pacific; and the Southern Railway in Kentucky is a part of the system. The additional franchise taxes demanded by the Commonwealth were on intangible property over what had been paid, and related only to the lines of the Southern Railway Company in Kentucky. There was no claim for taxes on the C., N. O. & T. P. lines. The Southern contended that the taxes imposed taxed its property located out of Kentucky, and the amounts on which the taxes were based were arbitrarily excessive.

The United States Supreme Court said that, if considered alone, the railroad of the Southern Railway Company in Kentucky would be a losing venture, its operating loss being more than \$157,000 per year (average for five years). The parts, outside the state, of the system of which it was a part, operated in connection with it, might be taken into consideration; but if the method pursued in valuing property within the state is arbitrary and the resulting value is grossly excessive, the tax must be condemned as in violation of the Fourteenth Amendment. "It is not permissible for the State to take into account any of the outside property unless it can be seen in some plain and fairly intelligible way that it adds to the value of the road and the rights exercised in the State." The court holds that "there is no foundation for the finding that there existed in these lines intangible values of \$1,730,000 (the increase for 1917), or any other substantial amount in excess of the value fairly to be attributed to the physical elements of the railroad;" and that "as the direct earnings per mile of that company are so much less than the average for the system, it is plain that the amount adjudged to have been omitted was arbitrarily excessive and included values of system property beyond the limits of Kentucky."

It was also held that the percentages used to make the apportionment to Kentucky were too high. The mileage of the C., N. O. & T. P., the Mobile & Ohio, and the Cumberland Railway and Cumberland Railroad were erroneously included. The mileage used to make the apportionment was more than three times that of the Southern Railway in Kentucky, and more than 30 per cent in excess of the combined mileage of that company and the C., N. O. & T. P. The enforcement of the franchise taxes so assessed would, it was held, violate the due process clause of the Fourteenth Amendment.—*Southern v. Kentucky*. Decided April 11, 1927. Opinion by Mr. Justice Butler.

NOTE: The value of the Kentucky franchises involved in the case was as follows: 1914, \$972,662; 1916, \$2,018,561; 1917, \$1,730,090; 1918, \$3,028,592. Year 1915 was not involved.

Santa Fe Supply Officers Hold System Meeting

THE annual system meeting of the purchasing and stores officers of the Atchison, Topeka & Santa Fe, which was held at Topeka, Kan., on April 28, 29 and 30, was the largest since the inauguration of these meetings in 1915. The attendance exceeded 130 and there were more addresses by officers of other departments of railway work and a more vigorous and thoroughgoing discussion than ever before. This was partly because of the practice now followed of preceding the system meeting by divisional meetings which crystallize questions to come up for final discussion and disposition, but it is also the result of the caliber of papers presented and the thorough understanding established in previous years that the system meeting of the supply department on the Santa Fe affords an opportunity for chief clerks, foremen, stockmen to be heard, as well as the storekeepers and purchasing heads.

The program included talks by H. E. Ray, general storekeeper and presiding officer and the father of the first system store meeting; by Isaiah Hale, supervisor of safety; E. L. Copeland, secretary and treasurer; F. A. Isaacson, assistant mechanical engineer; W. E. Davis, acting auditor of disbursements; H. H. Stephens, superintendent of Topeka shops; and H. H. Lanning, mechanical engineer. Reports and papers were presented on 17 different subjects as follows: Survey of Stock and Proper Turnover in Relation to Efficient Service, by C. H. Shuart; Analysis of Sectional Balances, by E. J. Burns; Surplus and Obsolete Material, by W. C. Hunt; New Contracts for Oils and Greases, by W. S. Wehe; Supply Trains, by W. C. Shaw; Physical Conditions at Storehouses, by T. Scully; Economic Value of Interdepartmental Co-operation by K. R. Stewart; Good Service Meetings, by H. I. Heath; Reclamation, by R. K. Graham; Mechanical Department Material, by William Turnbull; Operating Department Material, by A. P. Wolff; Market Conditions, Present and Future, by C. J. Hunter; Rail Yard Operation, F. H. Ludtke and W. H. Phillips; Accounting, by W. E. Brady, C. R. Holmes, H. W. Hughes and H. J. Wiggett; Inventory Handling by A. A. Nohrn and F. A. Zurcher; and Stationery Handling by F. A. Wilson.

In an analytical survey of the present supply situation and its relationship to proper turnover in conjunction with efficient service, C. H. Shuart brought out the fact

that the Santa Fe store department is functioning on an even keel with a minimum of stocks for the service rendered and while value of total material and supplies on hand is higher at the present time than in the previous year, a 40 per cent reduction has been made since 1921 without decrease in the consumption of materials. On the basis of issues of stock, the supply conditions during 1926 were maintained on approximately a 90-day turnover, taking into consideration the large amount of special material which must be carried longer.

One of the most interesting papers was presented by R. K. Graham, superintendent of the reclamation plant at Corwith, Ill., claimed to be the most complete plant of its kind in the United States as well as the oldest. Records for the past year indicate a large saving, and show that a total of 74,480 tons of scrap were handled at this plant during 1926. An average of 533 men were employed per day during 1926 in various scrap-handling and salvage enterprises, the latter netting the company a reported saving of \$364,558. During the first three months of the present year an average of 740 men per day have been employed in this work. The shipments of material from the plant during 1926 amounted to 7.25 cars per week.

The keynote of the paper by Mr. Turnbull, supervisor of locomotive material, was the importance of correct and efficient service, while the effect of the paper on market conditions by Mr. Hunter of the general purchasing agent's office was to establish a better appreciation of the present situation and outline what is liable to occur in the future, so that material can be ordered in due season. Papers on the rail mill at Newton, Kan., by F. H. Ludtke, superintendent, and the operation of the rail yard at San Bernardino by W. H. Phillips, traveling storekeeper, brought out that large savings have been developed at both plants. The rail mill at Newton has just been enlarged by an extensive building equipped with modern machinery.

Mr. Scully, traveling storekeeper, emphasized the importance of cleanly conditions, while Mr. Stewart, storekeeper on the Coast Lines at San Bernardino, developed the necessity for close co-operation with other departments in securing intelligent handling. Accounting, in its various ramifications was considered to be of such importance that an entire day was devoted to this subject from the origin of the requisition for material through to the final distribution of expenditures to the proper I.C.C. account.

Mr. Isaacson brought out that whereas there were 35



Santa Fe Supply Officers at System Meeting

Right to Left—E. J. Walker, assistant general purchasing agent; H. E. Ray, general storekeeper; J. J. Conn, assistant general purchasing agent; C. H. Holmville, assistant to general purchasing agent.

different standards for fire line connections on the Santa Fe system a few years ago, this number has been reduced to but one as a result of standardization practices and the co-operation obtained from the municipalities in se-

curing much greater uniformity in fire prevention work.

The meeting was given a colorful touch by the presentation of a gold watch to William Schultz, a stockman, who completed 50 years' service in the department May 1.

Attitude of I. C. C. on Railway Manufacturing

Commissioner McManamy answers five questions, all bearing on the future of the railway supply industry

IN response to requests from various members and groups of members of the Railway Business Association, that the Association ascertain the attitude of the Interstate Commerce Commission in the matter of railway manufacturing, the Association, through its secretary, Frank Noxon, undertook, in conferences with the members interested, to develop a simple inquiry to cover the ground in a few questions and to secure authentic replies to these questions from the Commission.

Section 15a of the Transportation Act limits the rule of adequate income by the words "under honest, efficient and economical management." The Bureau of Service, a unit within the Commission, deals with (1) car service, (2) efficiency and economy of operation and (3) transportation of explosives and other dangerous articles. Investigation of locomotive and other equipment repair contracts is conducted by this bureau, which reports to the Commission through Commissioner Frank McManamy. Mr. Noxon accordingly sought and obtained an interview with Commissioner McManamy, and the authorized answers to five questions follow:

Managements Must Use Their Own Judgment

Question:—In the pursuit of economy is every railroad held responsible for results and has it discretion to choose between contracting out manufactures or repairs and doing such work itself?

Answer:—Yes. In our investigation into the repair of equipment for the Erie, the Commission said, at page 659:

Our criticism here is not directed to the fact that the equipment was sent to outside shops, but to the unreasonable and excessive costs for such repairs at such shops.

The Supreme Court in *I. C. C. vs. Chicago Great Western*, 209 U. S. 108-118, said:

It must be remembered that railroads are the private property of their owners; that while, from the public character of the work in which they are engaged, the public has the power to prescribe rules for securing faithful and efficient service and equality between shippers and communities, yet in no proper sense is the public a general manager.

From the days of Judge Cooley, its first chairman, the Commission has followed that principle. In *Advances in Rates, Western case*, decided in 1911, in an opinion by the late Franklin K. Lane, 20 I. C. C. 317, it was said that management "should have wide latitude for experiment," that "the government has not undertaken to become the directing mind in railroad management. We are not the managers of the railroads." The above holds good even though the powers and duties of the Commission have been broadened by Congress. In the Transportation Act, Congress definitely placed responsibility for economy upon management when it limited the application of the rule of rate-making by use of the words "under honest, efficient and economical management." It required the Commission to consider efficiency of management in connection with establishing rates. The Commission has manifested no disposition to deprive railroad managers of their discretion. Our function is to hold them responsible for exercising such discretion without waste. A number of railroads have



Santa Fe Officers at System Supply Meeting

Left to Right—W. H. Phillips, traveling storekeeper; A. Moreton, purchasing agent; C. R. Holmes, stores department chief clerk; K. R. Stuart, district storekeeper.

laid before us contract repair projects to which they seemed to suppose the Commission would object. We have bidden them act on their own judgment.

Against Waste in Railway Shops

Question:—The Commission implies, then, a caution against waste in railway shop work as well as in contract work?

Answer:—Yes. What we criticize is waste wherever found. The Commission, however, will not be made a sales representative for manufacturers. They must sell their goods. They must persuade the buyer not only as against manufacturers but as against railway shop work.

Superintendence Overhead

Question:—In the locomotive repair inquiries, the Commission's investigators employed a certain schedule of accounting items for comparison of railway shop cost with contract price. Railway counsel urged that additional overhead items be included. One of these was superintendence. We understood that the exclusion of this item was justified upon the thought that since a given railway officer is drawing his salary whether the work is done or not, no part of it should be allocated to shop work which he supervises. Some of our people suggest a different view. They inquire whether human time and energy which costs the railway money and which can not be doing anything else while devoted to shop manufacture is not as much a shop cost item when appropriated to shop work as so much material similarly appropriated.

Answer:—Direct superintendence was included in all investigations of shop costs. Salaries and expenses of general officers must be charged pro rata against all equipment whether repaired under contract or in railway shops. To charge it against both would simply add to the total cost without changing the ratio, therefore it was fair to exclude it from both. The Commission expects the railways to take a common sense view. If the assignment of supervisory officers to shop work not previously done by the railroad actually occasions salary payments which would be saved if the shop work were contracted out, we would expect the comparison of shop costs with contract price to show the fact.

Overhead on New Investment

Question:—Railway counsel also urged other overhead items such as investment, maintenance, and other charges which the Commission excluded on the ground that in these cases existing plant was carrying these charges when idle, so that doing the work would not have occasioned them. What rule would apply in cases where new investment in buildings or machinery was made for the purpose of self-manufacture? When a carrier is deciding whether or not to enlarge its manufacturing plant and is comparing, as the basis of its conclusion, forecast contract price with forecast railroad shop cost, would not the carrier be expected to include the additional items incident to new investment, new maintenance, new insurance, diversion of supervisory and other officers' time, and any other definite increase of expense?

Future of the Railway Supply Industry

Answer:—There is an offset that the work will be done more cheaply precisely because the new plant will be new, up-to-date, and efficient. With that qualification, I would say yes, that a railway in deciding whether to invest in new manufacturing plant should include in its estimates of manufacturing cost, interest on the investment, maintenance, insurance, and actual diversion of supervisory officers' time.

Question:—My associates are anxious to form some reliable impression as to the future of railway supply

manufacture as an outside industry. We judge that the public expects mechanical advance toward safety for the public and for employees, and toward rate reductions and wage advances through economy. For our people it is of great importance to get some line on the channels through which such progress is to be sought. They apprehend that the survival or decline of their industries as laboratories of progress will depend largely on whether the government encourages or discourages contract business sufficiently stable, extensive and profitable to sustain costly experimentation with inventions. Does the Commission regard it as in the public interest for the railway supply industry to be preserved, and would it look with anxiety upon any tendency to starve it into feebleness?

Answer:—It is outside of the function of the government or any department of the government either to encourage or discourage contract business as applied to railway work. It must stand upon its own feet. My own view is that the railway supply industry is essential to the successful operation of the railroads and to the prosperity of the country. During federal control I occupied the position of Assistant Director of Operation in the Railroad Administration, in charge of all matters relating to equipment. In the year following the armistice, as the country was groping towards normality, I was required to decide the question whether the railway officers in the operating and mechanical departments should hold their Atlantic City June conventions and, if so, whether the manufacturers should be encouraged to exhibit. Without hesitation I authorized the conventions and the exposition. In a circular to regional directors, authorizing attendance of railway officers, I said:

It is desired that the representative members from the different railroads attend, as far as possible, and that other mechanical department officials who are members be permitted to attend for at least a portion of the time, where they can be spared from their regular duties without adversely affecting the service. It is anticipated that there will be on exhibition the most complete collection of mechanical appliances that has ever been exhibited at one of these conventions, and a study of it will be of substantial value to the mechanical department officers who are in attendance. In order to obtain the greatest possible amount of benefit from this convention, it is desired that each member below the rank of superintendent of motive power shall, on his return from the convention, make a written report to the superintendent of motive power relative to the new devices which he inspected at the convention. The superintendent of motive power will make a digest of the various subjects presented in this way, so that those which can be profitably adopted may be given consideration.

That was my attitude in 1919. That is my attitude today. Alike as a dependable source of standard supplies and as a promising source of inventions and progress, the railway supply industry is indispensable to the future development of our railways.



New Ice House and Platform, Denver Yard, D. & R. G. W.

Milwaukee Adopts the Latest in Material Handling

Motor trucks with demountable bodies and ramps installed at Milwaukee storehouse

THE store department of the Chicago, Milwaukee & St. Paul is installing a motor transport system in the terminal district at Milwaukee, Wis., which is looked upon as the forerunner of important changes in supply practice on this road. The installation, which is now partially in operation, thus far comprises a five-ton truck built to handle demountable bodies or unit containers of large capacity between specially-constructed loading and unloading docks or ramps. The system and equipment is that recently developed by the Mack Truck Company for handling l. c. l. freight in store-door delivery operations, etc., although the Milwaukee road expects to make some changes in the body design that will better adapt it to the particular use.

The large-capacity demountable bodies and the ramps distinguish the installation. Each body is of the open-crate type, being about 8 ft. wide and 12 to 14 ft. long, and built strong enough to carry the total capacity of the truck, which is five tons. When in position on the truck, each body rests on the truck bed, to which it is held by locks, but on the underside where the body overhangs the side of the truck are rollers, one at each corner for use in moving the body to ramps.

The ramp consists of a pair of runways constructed of structural steel about truck-body high which serve as the support for the truck body or unit container when it is

the steel I-beam sill at the forward end of the container and the truck is backed until it strikes the stop block when the driver disengages the coupler by means of a lever at his seat, and thence drives to the point where other unit containers are waiting to be loaded. When picking up a container the driver releases the coupler. This engages the truck and pulls it forward and down the ramp as the truck advances until the body again rests



The Ramp at the Coach Shop with a Truck Approaching



The Truck Leaving the Ramp with a Truck Body

not being hauled. The two supports are the ramps proper, deriving their name from the fact that the forward half of the top or roller way is inclined upward, the purpose of this being to catch the rollers on the bottom of the truck body as they hang free from the truck and gradually to raise the body clear of the truck as the motor backs into the platform.

As the container rises vertically it is forced ahead by a spring actuated coupler on the truck which engages

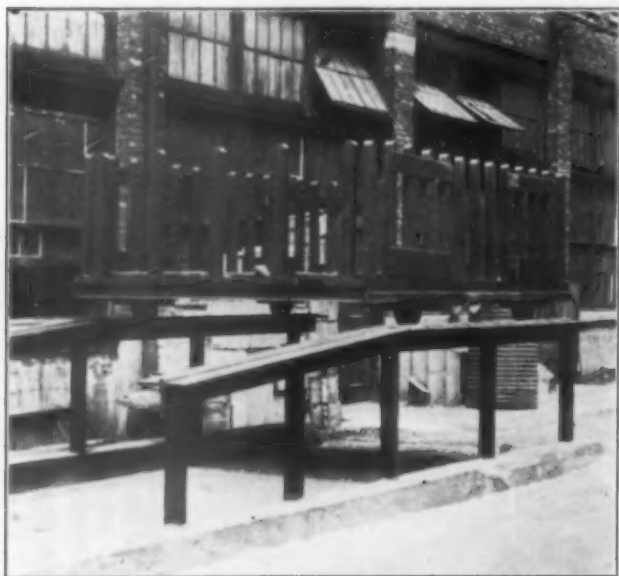
completely upon the bed of the truck and the rollers hang free. The driver then actuates four locks which engage the end sill of the container and hold it securely to the truck while it is being hauled.

The arrangement is such that the truck driver can pick up a loaded container, haul it and dock it without assistance, or even without leaving his seat, and the operation at the beginning and at the end of the trip can be performed in less than a minute. This is on the assumption, of course, that the container is loaded when the truck arrives and can be left on a ramp at destination.

The store forces of this road expect to profit in various ways from the introduction of this system at Milwaukee. It is pointed out that this is the largest terminal of the railroad, comprising the main shop and car repair yard and general storehouse. It is a place where a great deal of material is made and used, and from which much is shipped for consumption elsewhere. The handling of this material is a big item. This is particularly so by reason of the distributed condition of the supplies in the area, resulting from the policy of concentrating each class of material as near the point of use as practicable. Thus, the lumber yard, which stretches over 15 or more acres of ground, is in the vicinity of the car yard, flues and piping near the boiler shop, plate and bar iron near the blacksmith shop, paint near the coach shop, etc. A number of the sub-stores are several hundred feet from

each other and the general store, while a distance of several miles separates the general store from points in the vicinity of Milwaukee which are supplied directly from it.

All of the sub-stores are served by spur tracks so that cars arriving with material for these points can be switched close to the point of unloading and so that cars can be spotted for loads of material going to outside points, but these spurs do not eliminate the need for much cross-handling of material in the yard. There is the need for carrying material into the shops, from machine to machine in the shops, from the shops to the storehouse,



The Truck Body Docked for Loading

and vice versa, and also a constant demand for haulage between the general store and sub-stores, etc. To meet this condition as well as to facilitate actual loading and unloading operations, a system of motorized transport has been developed at Milwaukee which now comprises 11 Fordson tractors, 1 Deering crane tractor, and 1 Elwell-Parker lift tractor, and several hundred trailers.

By way of supplementing the lift truck operation and deriving the full advantage of its use, this company also possesses about 200 trays of wood or steel which, being in the nature of portable platforms on which material can be loaded and subsequently raised bodily by the lift truck and moved with the material without other handling, are employed in the terminal, and as their number increases are being left in the cars for the convenience in unloading material at destination points where other lift trucks are available. In addition to this equipment, three $2\frac{1}{2}$ -ton motor trucks have also been operated in the terminal for making long deliveries and handling the bigger loads. It is estimated that the motor trucks have handled about 500 tons of material each a month and the tractors and trailers about 50,000 tons of material a month, such are the demands and opportunities for haulage in the area.

The 5-ton truck in the ramp system takes the place of the three $2\frac{1}{2}$ -ton trucks which are worn out. In doing this, it will not only give double the unit loading capacity but when a sufficient number of ramps are built to cover all moves of the truck as planned, it will afford a saving of labor by dispensing in part at least with the helper whom it was necessary to send with other trucks.

Of greater importance than this, however, is the saving in time which the new system affords. Heretofore, ap-

proximately 30 min. were consumed in unloading the motor trucks, and 30 min. in loading, or a total of 60 min. a trip. Under the present method the truck should not be held more than a minute in each operation, or a total of 2 min. a trip. As a matter of fact, under the old plan the motor trucks were engaged in hauling material only about three hours out of eight, five hours being lost in loading up and unloading the bodies. The increased economy of tractor operation and the greater service obtained by converting this five hours' delay into haulage time is at once evident. A further advantage in this connection is the saving that is possible where the unit containers can be loaded at the convenience of the handling forces, instead of requiring them to drop other work when the trucks arrive. In addition, larger loading can be assured under a plan where the unit containers can be left until a full load is ready.

Another advantage anticipated is the more flexible system which the arrangement affords in keeping the sub-stores supplied with material and in making shipments to outside points. While, as has been mentioned, the sub-stores have spur tracks, it is emphasized that because of the fixed position of spur tracks and the switching difficulties, spur tracks are often as much a handicap as they are a help in material handling. There is the problem in getting the switching done speedily and the further condition that much of the material from one sub-store is obtained in cars carrying material for other sub-stores. In such cases, there are two alternatives, one of carrying the material by truck to the sub-stores and the other of making another switch. The ramp system with large-capacity trucks is particularly adapted to the faster method of receiving mixed cars of material at one point, preferably the general store platform, and to distributing the loads by truck in unit containers, one for each sub-store.

The spur track presents a similar problem when shipping out to line points, because where supplies are to be transferred out on the road it becomes necessary in connection with the policy of holding a car for a full load either to switch the car from one sub-store to another in trap service or to follow the usual practice of holding orders until a sufficient number are available to warrant a car shipment. As the ramp system is developed it is expected to dispense with much of the trap car service in the district and by eliminating the advisability of holding orders, it is expected to reduce the time at which transfers are made to other stores from 45 to 14 days.

The ramp system is thus expected to become a more important supplement to the tractors and trailers than the ordinary truck operations were or ever could be. Indeed, the time is anticipated when the ramp principle may be extended to the point where, by means of larger ramps, unit containers will be docked where they can be quickly dropped on flat cars for shipment to other storehouses, reducing still further the number of movements involved in the handling of material from the time it is loaded until it is unloaded at destination.

Only three ramps have been installed up to the present time, a single one at the coach shop, another at the paint manufacturing shop, and a double ramp at the general store platform. These are simply the forerunners of a dozen or more ramps to be installed at strategic points in the terminal area and of additional ramps which will be built in storehouse platforms where it is now planned to concentrate much of the inbound and outbound loading for the supply zone.

The installation is being made under the immediate direction of J. V. Miller, assistant general storekeeper, to whom we are indebted for the above information on the work now in progress and for the outline of the possibilities to which consideration is being given.

American Funds for Important New Balkan Railway

Loan recently floated to build line giving Yugoslav products easy outlet to Adriatic

By Captain Gordon Gordon-Smith

ONE of the greatest problems—if not the very greatest—which the government of the kingdom of the Serbs, Croats and Slovenes (popularly known as Yugoslavia) has had to face is the question of transportation—by road, river and rail. The new kingdom has immense and valuable natural resources. The country is fertile to a notable degree and counts among the leading agricultural states of Europe. It is probably the greatest corn growing country in that continent and has hundreds of thousands of tons of that cereal available for export. The Serbian plums are world famous for their size and excellence. Horse and cattle raising is also a flourishing industry. Then there are 30,000 square miles of magnificent forests, the value of which runs into hundreds of millions of dollars, awaiting development.

There is, further, the mineral wealth of the country. In Yugoslavia there is gold, silver, quick-silver, copper, lead, tin, iron, coal, bauxite, chrome, manganese, etc., in enormous quantities. The copper mines of Bor, in Serbia, are the richest in Europe. In Bosnia, at Ljubia, there is a mountain of the very richest iron ore. In Dalmatia the marl for making the finest cement runs to the billions of tons. But the lumber industry and the development of the mineral wealth of the country are still in their infancy. The reason for this is the want of means of transportation and of seaports to handle to sea-borne trade.

Railroads Destroyed in War

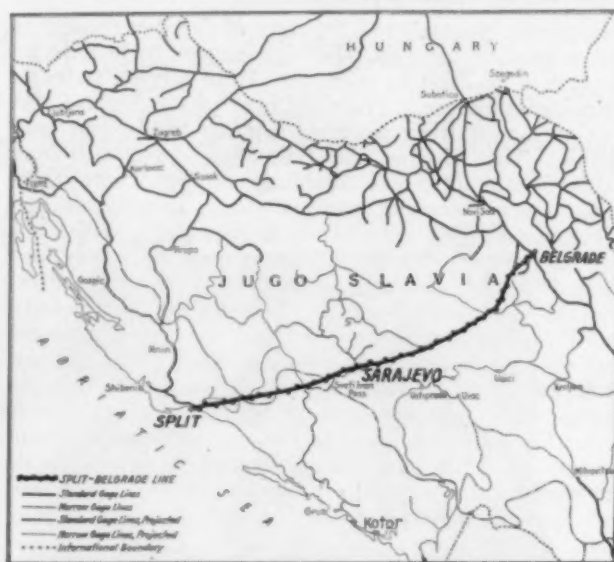
When the world war came to an end and the present kingdom was formed by the union between the kingdoms of Serbia and Montenegro and the Serbo-Croat provinces of the Austrian Empire (Croatia, Slovenia, Dalmatia, Bosnia, Herzegovina, the Voivodina and part of the Banat of Temesvar). The new kingdom had to struggle with a railway problem presenting almost insuperable difficulties. The retreating enemy had completely destroyed the whole Serbian railway system. Every bridge, tunnel and culvert had been blown up with dynamite. Every railway station, warehouse and repair shop had been burned down. The telegraph and telephone instruments had either been smashed to pieces or carried off. Turntables, water towers and signal towers were blown to pieces and the track torn up. In a word the whole Serbian railway system had been reduced to a junk heap and had to be re-built from A to Z. Furthermore the entire rolling stock had been carried off by the enemy.

Ante-Bellum Railways All Led to Austria-Hungary

In the provinces formerly belonging to Austria-Hungary things were almost as bad. It is true that these railways had not suffered from actual war operations, but little or nothing had been done for their upkeep during five years of war. Another problem that confronted the Belgrade government was the question of inter-communication between the various Serbo-Croat provinces. The

railway policy of Austria had been deliberately designed to keep these provinces, so to say, in separate water-tight compartments. The governments of Vienna and Budapest knew that close inter-communication would help to maintain their racial spirit and encourage their resistance to Austrian and Hungarian oppression.

As a consequence the new kingdom found itself in possession of railways, but no railway system. In addition the government had, in the work of reconstruction, to depend entirely on its own resources. All the other



Jugoslavia's Proposed New Railroad, to Be Built With Proceeds of an American Loan

nations of Europe were themselves too hard hit by the war to give any assistance, financially or otherwise.

The whole energies of the nation were devoted to the effort of bringing order out of the existing chaos. The whole army, war-weary though it was, at once set to work on restoring the ruined railways. A large section of the civil population was also mobilized for this work. With such energy did they work that in six months' time the Serbian railways had at least been provisionally repaired and trains were able to run once more.

Connecting the "Compartments" by Railway

The lines in the former Austrian provinces were then taken in hand. Connecting lines were constructed linking up the railway systems of the various provinces, thus opening up one district after the other to foreign export traffic and forming a homogeneous whole out of the former separate compartments. Since the foundation of the new kingdom sixteen new lines have been constructed at a total cost of 911,400,000 dinars (\$12,400,000) and all

the lines existing before the war put in thorough repair, bridges and stations have been rebuilt and adequate rolling stock provided. To provide the funds for this an internal loan of 500,000,000 dinars (about \$9,500,000) was raised and a considerable part of the Blair & Company's (New York) loan of \$15,500,000, issued in 1922, was devoted to the same purpose.

As nearly all the railways in Yugoslavia are state-owned and all are state-operated, the government, for the last seven years, has devoted all the surplus profits to railway construction and improvement. In addition considerable sums were appropriated each year from current government revenue for railway purposes. This has, of course, imposed a tremendous burden on the nation, which has borne it with patriotic courage. This restoration and improvement of the railway system of the kingdom has rendered free inter-communication possible between all the sections of the country. The internal trade and commerce have naturally benefited greatly by these improved conditions. Agriculture, the lumber industry and the development of the mineral wealth of the country, began to show signs of prosperity and to exceed greatly the domestic needs. This brought up the problem of foreign export trade.

Fiume, Best Existing Port, in Italy's Possession

It became the task and the duty of the government to find a solution for this. Foreign export trade requires seaports in addition to railways. Here a fresh series of complications arose. The chief port of the Serbo-Croat provinces, while they were in Austrian hands, had been Fiume. That city on the Dalmatian coast with over 30,000 inhabitants, was admirably equipped with large docks, electric cranes, spacious quays, warehouses and railway sidings, for carrying on a large and intensive export and import trade. Unfortunately, this port was claimed by Italy and after a number of international incidents, which nearly led to war between that country and Yugoslavia, a compromise was arrived at and the port was cut in two, Fiume proper being given to Italy, while the section known as Shushak was given to Yugoslavia. The result has been the ruin of Fiume as a seaport. Goods to or from Yugoslavia are naturally sent through Shushak. As Fiume depends for its economic existence on the Yugoslav hinterland, the once busy seaport is now almost completely without trade of any kind.

Choosing the New Port

After the loss of Fiume the Yugoslav government had to take steps to provide for the sea-borne commerce of the kingdom. For this, in addition to Shushak, four ports could be taken into consideration, Shebenik (Sibenico), Gruz (Gravosa), Split (Spalato) and Kotor (Bocche di Cattaro). Of the four, the finest natural harbor is undoubtedly Kotor, but it is so far without railway communication with the hinterland and the mountainous nature of the country to be traversed would make the construction of a trunk line into the interior of Yugoslavia a long and costly undertaking. There is no doubt that sooner or later this line will be built, as it will tap a country with immense economic possibilities, but for the time being it is necessary to concentrate on a project which will give more immediate results, take less time to construct and cost less money. It is for this reason that the port of Split has been selected and steps are being taken for the immediate construction of a double-track, standard gage line, running from Belgrade to the Adriatic.

This line will, therefore, connect the capital, via Sara-

jevo, with Split. In addition it will connect the confluence of the Save and Danube rivers with the Adriatic. These two magnificent rivers, which are navigable for hundreds of miles, tap the great mining and forest centers of the Balkans. It will thus connect one of the most fertile regions in Europe with the mountainous Dalmatia, rich in minerals. From the capital, a line running across the Danube at Pancevo, will continue the Belgrade-Split railway into the Banat of Temesvar, the richest and most fertile province of Yugoslavia, while the great plum-growing-center of Valjevo will be put in direct connection with the sea.

The new line will further open up the immense mineral wealth of Bosnia, giving a fresh impetus to the development of the mines and furnaces of Vares and Zelenica. At the same time the stone, marble, cement, artificial manure and the fish industries of Dalmatia will have the hinterland opened up to them.

It is to the construction of this line of railway that the government proposes to devote a large part of the new \$30,000,000 loan just floated in New York by Blair & Co. There is no doubt that this will have a most powerful effect on the development of the economic life of the country.

Boston & Maine Train Control Approved

WASHINGTON, D. C.

THE Interstate Commerce Commission on May 10 issued a report by Division 1 approving, with an exception, the installation of the automatic train-stop system of the Union Switch & Signal Company on the Fitchburg-Berkshire division of the Boston & Maine, from West Cambridge (Mass.) tower to East Deerfield yard, 99.5 miles. Of this 94.6 miles is double-track and 4.9 miles is three-track. There are 130 equipped locomotives and two gas-electric cars.

The cost of the installation, as reported by the company, was as follows:

ROADWAY EQUIPMENT	
Total cost of roadway equipment of train control installation, less power lines and power apparatus, if any, and less cost of signals or cost of change in existing signal system; less salvage	\$189,697.50
Total cost of changes in existing signal system made necessary by train control; less salvage	36,536.54
Total cost all other roadway equipment, if any	11,600.28
Total cost of roadway installation	\$237,834.32
LOCOMOTIVE EQUIPMENT	
Total cost locomotive equipment installed	269,633.97
Total cost of installation	\$534,468.29

The exception is as follows:

The reset cock must be so located or so designed and constructed that the apparatus cannot be reset while the locomotive is in motion. The main switch should be sealed and steps taken to prevent the possibility of defeating the purpose of the train-stop system by any of the following methods: depleting the train-stop pressure and acknowledging, shutting down headlight generator and acknowledging, opening main switch and acknowledging, or manipulating the reset cock in conjunction with the double-heading cock upon the starting of an automatic brake application.

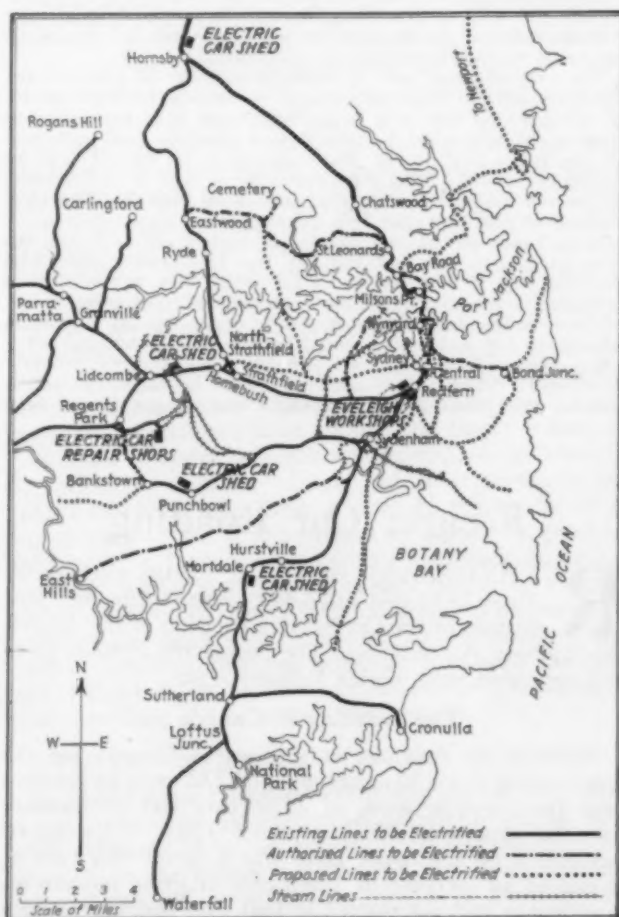
There are also 12 requirements as to maintenance, and inspection, with suggestions concerning added refinements, in protection against false or undesired operations which might be introduced.

Sydney Suburban Electrification Progress

A SCHEDULE for electrifying the Sydney and Suburban Railways in Australia (New South Wales Government Railways) was drawn up in June, 1925. An outline of the schedule is included in the table.

Section	Date electric service to commence	Date electric service completed	Miles of main line track to be electrified
Sydney-Sutherland	1-1-26	6-30-26	63.67
Sydenham-Bankstown	7-1-26	1-1-27	16.84
Sutherland-National Park	.....	3-1-27	3.57
Milson's Pt.-Hornsby	1-1-27	7-1-27	26.38
Sydney-Homebush	7-1-27	1-1-28	33.14
Homebush-Liverpool, via Sefton Park	1-1-29	4-1-29	29.06
Lidcombe-Parramatta	4-1-29	11-1-29	8.25
Granville-Cabramatta	11-1-29	3-1-30	13.09
Strathfield-Hornsby	3-1-30	11-1-30	27.63
Total			221.61

The section of the lines from Sydney to Sutherland was completed on time and work is in progress on the



Sydney and Suburban Lines of the New South Wales Government Railways

lines from Sydenham to Bankstown, Milson's Point to Hornsby and Sydney to Homebush.

The rolling stock used consists of multiple-unit motor cars and trailers, one motor car and one trailer constituting a train unit. Some of these cars have been converted from coaches used previously and additional cars have been purchased. From rolling stock existing previous to electrification 101 cars were considered suitable for motor cars, 193 cars suitable for widening as trailers

and 132 cars suitable for altering as trailers. Contracts for 151 new motor cars and 151 new trailers have been placed with the Metropolitan-Vickers Electrical Company of England and plans have been made to order an additional 298 motor cars and 74 trailers, making a total of 1,100 cars in all. A considerable number of the cars ordered from the Metropolitan-Vickers Company are now in service. These cars are of all-steel construction. Cars and car equipment are also being built locally by the Clyde Engineering Company, Ltd., and by the Government Dockyard, Walsh Island, Newcastle. Announcement has been made that all future orders will be placed locally.

The contact system used consists of a single overhead catenary supported by a braced truss spanning between two steel masts set in concrete bases. The longitudinal distance of masts apart is 200 ft. The distance center to center across four tracks is 60 ft. and for two tracks is 33 ft. on tangent track. Pantographs are used to collect the 1500-volt direct current from the contact wire.

Duplex Gage Equipped with Rotating Back Pressure Scale

THE Ashton Valve Company, 179 First street, Cambridge, Mass., has recently made two changes to its locomotive duplex back pressure gages. The first improvement is in the form of an electric light attachment which fits over the top of the gage. The illumination of the dial is accomplished by an elec-



An Electric Light Attachment for Illuminating Ashton Duplex Back Pressure Gages

tric light enclosed in a special hood, which prevents diffusion of the light over other parts of the cab. The electric attachment is designed for a standard cab lamp, S-17 bulb, 15 watts, 34 volts, having a standard re-

ceptacle with a lamp grip, as adopted by the Mechanical Division of the A. R. A. in 1920. A wiring outlet threaded for a standard strain relief bushing is also part of the equipment.

The second improvement consists of a back pressure scale on a small dial in place of a second pointer common to the other styles of back pressure gage manufactured by this company. The graduations for the back pressure are on a rotating dial which may be read through an opening in the large dial, as shown in the



A Locomotive Duplex Gage with the Back Pressure Scale on a Rotating Dial

illustration. The large or steam chest pressure dial is black with white figures, and the small or back pressure rotating dial is white with black figures.

The gage is made only in the 6 $\frac{3}{4}$ -in. size in either an iron or brass case with a threaded ring, and can be furnished with an electric light attachment similar to the one described above. The gage can be furnished in two sizes; namely, large dial, 400 lb. by 30-in. vacuum, and small dial, 50 lb., or large dial, 300 lb. by 30-in. vacuum and the small dial, 30 lb.

New Haven Issues Coal Storage Rules

IN order to avoid losses by fire in coal piles, the New York, New Haven & Hartford, through W. F. Hickey, superintendent of insurance, has issued the following instructions governing the proper handling and care of all fuel stored on the system.

Storing and Handling Bituminous Coal

The storage ground should not be of a marshy nature or subject to drainage from any source.

Coal should not be stored near external sources of heat, even though the heat transmitted be moderate, and should not be stored against buildings.

Avoid admission of air to the interior of piles through interstices around foreign objects such as timbers or irregular brickwork or through porous bottoms, such as coarse cinders.

Do not permit pieces of wood, oily waste, or other easily combustible material to be mixed with the coal during storage, as they may form a starting point for fire.

The height of piles should be limited to 12 ft. Arrange the piles in as many units as possible, restricting the length and width in order to provide spacing not only for ventilation pur-

poses but to expedite rehandling if necessary. There should be a distance of at least 5 ft. between piles, and this space maintained free for complete ventilation and dispersion of gases.

Pile all coal so that the lump and fine materials are distributed as evenly as possible; not as is often done, allowing lumps to roll down from the peak and forming air passages at the bottom of the pile.

Where coal is stored under shelter or inside structures, surface ventilation should be secured to facilitate the escape of gas by the circulation of the atmosphere.

In coal with a tendency toward heating, temperature rises are comparatively gradual, and if detected in time complete combustion may be prevented by rehandling. If the ignition point is reached, the fire may burn for a considerable time in the interior of the pile before becoming apparent. For the detection and prevention of fire, hollow iron pipes staggered every 50 ft. through piles may be used, driven within one foot of the bottom, these pipes to be pointed and closed at the bottom to facilitate installation and provided with a stopper for closing the opening at the top to prevent the admission of air. Daily thermometer readings, or readings every few days, should be taken in order that any excessive rise in temperature may be readily detected, and when the temperature has reached 125 deg. rehandling should be started. High sulphur coal should be especially watched, owing to the danger of "heating."

Wherever it is possible to do so, all wet coal, and especially that wetted by snow and ice, should be disposed of for immediate use without first being stored. If, however, its storage is unavoidable, it should form the top of the pile and be spread out thinly to expedite drying by evaporation.

The only effectual way of extinguishing fire in coal storage is by rehandling. Generally, water is not successfully applied in extinguishing fire in a coal pile because it is impossible to saturate the pile. The best method of handling coal in danger of fire is to load it out and saturate it so that it will be thoroughly cooled. The best preventive of loss in coal storage is constant inspection for incipient heating and the immediate removal of coal from the spot affected.

Special care should be exercised in loading out coal that has been on fire to see that the fire has been extinguished and that the coal is not heated. Coal which has a tendency to spontaneous ignition should be turned over frequently.

Where large quantities of coal are stored, special watchman protection, day and night, should be provided, watchman registering hourly from approved portable clock stations properly distributed. Temperature readings should be taken by watchman at least once during the night and proper record kept of same.

Freight Car Loading

REVENUE freight car loading for the week ended April 30 totaled 1,026,440, according to the compilation of the Car Service Division of the American Railway Association. The customary detailed table will appear in next week's *Railway Age*.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended April 30 aggregated 62,232 cars, an increase over the previous week of 3,636 cars and an increase over the same week last year of 6,359 cars. Opening of navigation on the upper lakes was a factor this year as it caused an increase of 1,585 cars in grain movement. Navigation had not opened at that time last year, which fact is responsible for the large increase over the same week last year.

Commodities	Total for Canada			Cumulative totals to date	
	April 30, 1927	April 23, 1927	May 1, 1926	1927	1926
Grain and grain products...	8,318	6,733	5,511	134,977	112,464
Live stock.....	1,848	1,751	1,950	34,752	35,023
Coal.....	5,857	5,394	3,711	106,980	74,583
Coke.....	205	253	385	5,899	7,781
Lumber.....	3,827	3,784	3,748	55,445	56,692
Pulpwood.....	1,714	1,848	1,985	82,229	60,228
Pulp and paper.....	2,286	2,290	2,483	37,922	44,085
Other forest products.....	2,843	2,846	3,157	56,116	60,035
Ore.....	1,536	1,495	1,506	23,992	24,196
Merchandise, l. c. l.....	18,561	18,324	17,359	280,900	261,558
Miscellaneous.....	15,237	13,873	14,078	207,255	198,342
Total cars loaded.....	62,232	58,596	55,873	1,026,467	934,987
Total cars received from connections.....	38,049	37,691	37,815	667,825	636,526

Are Accounting Reserves Sound?

The philosophy of this method of recording loss of value and the relation, if any, between reserves and depreciation

By Henry Earle Riggs
Professor of Civil Engineering, University of Michigan

PART I

DURING the last quarter of a century a vast amount of work has been done under the name of valuation. Certain principles and methods have been established but a number of matters are still unsettled, some of great economic importance, perhaps none more so than those totally different things or concepts which are called depreciation.

In a former article,* the writer undertook to set forth his views on depreciation, as he understands the meaning of that term as it has been used by the courts in the Knoxville water works case and subsequent cases. It is necessary to restate very briefly one or two of the fundamental things essential to an understanding of these puzzling subjects.

First, the concept which the courts have called depreciation, i.e., loss of value or impairment of investment of physical property of a plant devoted to public service, is an entirely different thing from the concept to which accountants have applied the same.

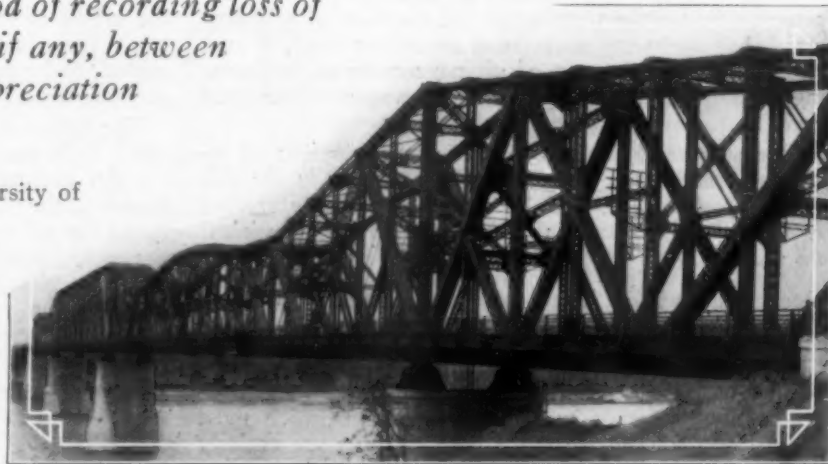
Second, in order to reach any intelligent understanding of either of these subjects, one must resolutely put out of mind the other one, as they have no relation to one another. One is impairment of invested capital on account of a fault of the owner; the other is an accounting device to distribute certain operating expense charges uniformly over a year or a period of years.

This paper deals with the second, or accountant's conception, and therefore has nothing to do with the subject of depreciation as found in valuation. That subject must therefore not be allowed to intrude.

The Present Importance of This Discussion

It would appear probable that within the next year or two some now undetermined questions will be definitely disposed of by the courts. For several years the hearings on the tentative valuations have been proceeding and many final valuations have been fixed by the Interstate Commerce Commission. None of the major issues raised by the federal valuation have as yet been finally passed upon by the Supreme Court in cases growing out of that valuation, and apparently they will not be until such time as the valuations are used as a basis for rate making or condemnation.

Another group of hearings are now being held under Section 15a of the Transportation act, and have to do with recapture. These cases involve several major issues. Either the price level of a valuation date as of the year of recapture, or estimated investment as of the date of installation of the property is entitled to greatest



Each Property Requires Special Consideration

weight in arriving at value. This is one issue of prime importance, the principles of which are ably discussed in the majority and dissenting opinions in the O'Fallon case. Depreciation, if any exists, must be defined and principles fixed for its determination. This is the next most vital question. A third relates to the subject of accounting reserves. Inasmuch as these recapture cases do make a direct use of valuation in a rate proceeding, and as the Commission must of necessity use the tentative or final valuation as a basis for determining its valuation as of the date of recapture, it is fair to assume that such cases as reach the courts will be promptly disposed of and definite rules of procedure in valuation established.

The recent order of the Commission in Docket No. 15100, dealing primarily with the subject of accounting reserves, but also bringing in the subject of depreciation of valuation under the theory of the Commission also appears likely to compel a consideration by the courts.

The discussion of valuation and depreciation, and a clear understanding of them is therefore timely, and this paper is presented in the hope that it may help to clarify the subject, or if not, to start some helpful debate. This is an attempt to set forth the philosophy of accounting reserves, as the writer sees it after 40 years of engineering practice. This is not an accounting discussion. Space does not permit any consideration of the detailed methods of accounting, and one who is not, and does not profess to be an accountant may very properly refrain from talking about the details of accounting practice.

Establishment of Reserves

Primarily the reason for establishing reserves is to equalize charges to operating expense and spread large and irregularly recurring costs uniformly over a period of months or years. Thus the practice of making uniform monthly charges to expense and credits to a reserve for taxes, for the year's purchase of steel rails, or for other large items of expense which must be met at a given date, is well known and long established. If each month bears its proportionate share of the accruing expense, there will be substantial uniformity of net earnings month after month.

In just the same way large recurring replacement costs, which can be definitely forecast, can be spread

*RAILWAY AGE, February 12, page 465.

over a period of several years, or even over the life of the item of property, thus making each year bear its proportionate share of the cost of replacement. The replacement of plant consumed in service on a property of continuing life is a true charge against operating expenses, because the wearing out of the item of property which has to be replaced (such as rail or ties), is just as truly part of the cost of giving service as the burning of coal in the locomotive or the wages of the train crew.

The only reason in the world for the adoption of reserves in accounting is *to equalize expenses in the different fiscal periods, in order that the ratio of operating expenses to gross earnings may be kept free from violent fluctuations.*

Reserves May Be Used for

Equalization or Amortization

Uniform monthly or yearly charges which are intended to spread or equalize the cost of large and infrequently recurring items of replacement which must be met *if the property is a continuing one* are entirely proper, but have no flavor of "depreciation" reserves. The railroad is a continuing property. The replacement of a large bridge, a terminal station or other structure or group of structures, against which the reserves are established, is merely an operating expense which must be incurred that the railroad may continue to function.

Whether the proper name be "retirement" reserves, "replacement" reserves or "maintenance" reserves is immaterial. They have no connection or relation at all to any depreciation that may exist in the property as a whole, nor does their building up in any way measure accruing depreciation in the property as a whole. They are designed to equalize operating expenses, and they should not be called "depreciation reserves."

Where reserves accounting is used in the case of property of expiring life, for the purpose of amortizing the investment in property, there is some ground for applying the term depreciation reserve although the word amortization is just as expressive. Investment in a mining property where the ore body is of limited extent, or in a railroad built to serve such mines, or to get the timber from a certain tract of land, are illustrations of properties in which the investment ought to be amortized during the life of the business.

Reserve Accounting by No Means a New Thing

An impression seems to have gained ground that this device for spreading large items of cost is of recent origin. The writer has found English references prior to 1830 which indicate that such charges were made, based on the estimated life of the items. In a law establishing the form of return to be made by the railroad to the state, passed in Massachusetts on April 16, 1846, and in a similar law passed in New York on April 2, 1850, accounts for the depreciation of equipment were provided for, although an examination of the reports of both states shows that they were not observed and no "depreciation" was reported. This subject is discussed by John T. Clark, state engineer of New York in his report of 1854, the last year the old form was used. This was practically at the beginning of the industry, when there was no such certainty as to the permanency of the railroads as there now is. In 1850 the book of Dionysius Lardner on "Railway Economy" discusses the practice of establishing charges for "depreciation" on rolling stock which had been tried in England and abandoned as untenable. The author was in full accord with the abandonment of the theory, saying: "This

point having been conclusively established, the companies very properly discontinued to set aside from revenues any fund for the reproduction of stock; but they would have been justified in strict equity, in going further, and in taking back from the capital, and placing to the credit of revenue, all the sums which in previous years they had erroneously brought to the credit of capital, to represent a deterioration which did not exist, and pay for a future want that could never arise."

The writer finds no further references to depreciation until 1878 and 1879. In *United States vs. Kansas Pacific*, decided in October 1878 (99 U. S. 455, on p. 459), the Company claimed that a depreciation account for rail replacement was a proper deduction before the determination of net earnings. The court said: "We are clearly of the opinion that it is not a proper charge. Only such expenditures as are actually made can with any propriety be claimed as a deduction from net earnings." And that settled that. This was the controlling decision on the subject until 1909. The *Railroad Gazette* of June 6, 1879, page 310, contains the only other discussion of this subject, so far as the railroad industry was concerned, which the writer has found between 1850 and 1900.

Why the Waterworks Industry Needs Reserves

The waterworks industry is without doubt responsible for the reviving of reserve accounting, for the insistence upon the term "depreciation reserve," and for a very large part of the discussion, especially as it relates to various so-called "methods" of setting up reserves. The reason for this is not hard to understand. Here is a utility consisting of a pumping station, a few very large and costly pumps, a boiler plant, a reservoir, a standpipe, and a system of cast iron underground mains for distribution.

Day to day replacements of parts, as is done on a railroad, was not possible. The items were large, costly and of long life. A study of water works, maintenance, repairs and replacements accounts will disclose the fact that ordinary annual expenditures for maintenance range from 0.5 per cent to slightly over 1 per cent of the investment in plant, while those of a railroad will range from 5 per cent to 6 per cent of the investment in way and structures, 15 per cent to 20 per cent and more of the investment in locomotives, and 10 per cent to 20 per cent of the investment in freight and passenger equipment.

The two industries are not at all comparable when it comes to the matter of maintenance of the integrity of investment in plant. The waterworks must use reserve accounting if the ratio of operating expense to gross earnings is to be kept at all uniform. The large railroad can continue indefinitely without using reserves and with uniform expenditures.

In such an industry as the waterworks, it is very easy to see how it was argued that the wearing out of a pair of pumps was an operating expense, and that a reserve must be established so that each year the accruing "depreciation" of the pumps would be provided for by charges to the customers of that year. There was in this instance, along with sound argument for reserves, a failure to recognize the fundamental truth that the *waterworks property* was not depreciating, as the pumps wore out. The pumps had to be replaced. There was no lessening of capacity or of efficiency as the pumps grew older. There was no element of depletion of the plant as a whole, there was no amortizing of the investment in the waterworks. The whole problem was one of "making provision, out of earnings, to keep the investment intact" and doing it in such a way that charges

to expense would be reasonably uniform year after year.

Proof of the early interest of the waterworks industry in this form of accounting is to be found in the San Diego Water Co. Case, 118 Cal. 556. This case, decided in October, 1897, is of interest in that the dissenting opinion shows a clear understanding of the principles which control present day public utility regulation. The case was decided in accordance with the Kansas Pacific Case, 99 U. S. 455. During the years following up to 1915 waterworks engineers had a very large part, if not the largest, in all discussion of this subject, and, owing to their failure to recognize differences in different properties and industries, they are largely responsible for the great confusion that involves the subject of depreciation.

The Distinction Between Reserves and Funds

The writer has found, especially among engineers engaged in valuation work, considerable confusion as to terminology and a tendency to use the terms reserve and fund interchangeably. This will also be noted in some of the court decisions, indeed the wholly meaningless expression, "depreciation reserve fund" is once in a while noted.

A *reserve* is a liability, appearing on the right hand side of the balance sheet. The amount stated is the credit balance in the account. Where reserve accounting is used, when an item of property is retired, the reserve is charged with the amount of the credit in the reserves in respect of the item retired, the balance, less salvage (if any), being charged to operating expenses. The reserve accounts are purely the result of book keeping entries, and do not represent any definite funds set aside.

The charges to operating expenses do not represent any actual expenditure of money, therefore the effect is to deduct from current income which would otherwise be available for dividends or surplus, an amount equal to the charges to operating expenses. The expression has been used that reserves are "ear marked surplus."

If no specific fund is established when the reserves are created it necessarily follows that an equivalent amount of cash exists either in the treasury or invested in assets. In other words this amount of money becomes available to the company for its use for current needs or for investment in capital or current assets.

A *fund* is an item appearing on the asset side of the balance sheet, and if established as a depreciation fund, represents money set aside for the purpose of replacing items of property as they wear out. These assets usually consist of cash or securities which can be converted readily to cash.

Emphasis must be laid on the fact that the "depreciation fund" is not created by the accounting transactions which establish the "depreciation reserve." The two accounts have no relation to one another. Either may exist without the other. The fund is only established when cash or some other asset item is credited.

It must also be clearly borne in mind that the setting aside of money in a "depreciation fund" is not charging "depreciation." This can only be done by reducing net earnings through a charge against operating expenses. There is considerable room for difference of opinion as to the good business judgment involved in the establishment of funds, which definitely tie up assets and devote them to specific purposes, and deprive the company of the use of them for current needs.

[The second and concluding part of this article will appear in an early issue.]

S. P. Reduces Stationery Costs by Revising Forms

DURING the past 16 months the Southern Pacific made a material reduction in its stationery bill. This has been accomplished by eliminating unnecessary forms, reducing the size of others, consolidating forms, using a cheaper grade of paper, printing on white instead of more expensive colored paper, omitting instructions especially on the reverse side of forms, substituting black non-copying ink for copying and colored inks and by making other changes in forms to produce economy.

It is difficult to show the saving in dollars and cents, but a few concrete examples indicate the economies that have been made. A total saving of \$600 a year was made by discontinuing the use of linen shipping tags and adopting instead a manila tag of equal size which had proved more efficient on certain parts of the system where it had been in use previously. Another \$550 yearly saving was made by substituting 16-lb. paper for 20-lb. in printing a form for requesting transportation and by omitting instructions on the reverse side. A saving of \$300 was made by reducing slightly the weight of paper and cutting one inch from the length of the form for the check of a train register. Printing the required headings and ruling on four established sizes of vellum tracing sheets saved \$1,450 a year. The installation of an inexpensive blank permitted the discontinuance of two books, each costing \$100 annually, and produced a saving in clerical labor of \$720 a year. A form, 8½ in. by 14 in., of which from 7 to 15 sheets were used monthly on each of 59 roadmasters' districts, was replaced by a one-sheet report for each district, thereby saving an aggregate of one man's time and labor and material amounting to several thousand forms a year. These six cases account for a total annual saving in labor and material of over \$5,000, which will be repeated each year. A total of 1,316 forms were discontinued or revised, representing indeterminable savings that would greatly increase that figure.

These economies in the use of stationery have been brought about through the work of a forms committee which was organized to study the forms in current use on the railroad and introduce new practices. The committee is comprised of men from the executive, operating, freight and passenger traffic, motive power, maintenance of way and freight claim departments who were selected because of their knowledge of the requirements of stationery forms in their respective departments. Operating department sub-committeemen were chosen for each operating division.

Committeemen give consideration to forms submitted by various departments and make their recommendations to the chairman whose final approval is required on forms before they are printed. Co-operating with the Pacific Lines committee are similar committees on the Southern Pacific Lines in Texas and Louisiana, the Southern Pacific of Mexico, the Southern Pacific Steamship Lines and the Pacific Electric. These committees interchange their local forms for the purpose of standardizing both blanks and methods, and for the purpose of effecting possible reductions in cost through the printing of large stocks of a common form for use on all units of the property.

The stationery forms committee was furnished, upon its organization, with samples of each form used on the system except those of the accounting department. The reason for this exception is that the accounting depart-

ments of all system lines have for some years maintained a committee which has devoted its time exclusively to a study of accounting forms and practices. The forms collected by the stationery forms committee were filed numerically in the chairman's office and indexed by subjects for ready reference to all forms furnishing the same or approximately the same information. Instructions were issued that forms should not be printed or reprinted unless they carry the chairman's approval. Departments desiring to install new forms or revise existing forms submit samples to the chairman, giving their reasons for the proposed action. The chairman refers these to committeemen who investigate the necessity for the new forms or the desirability of the recommended revisions and to ascertain first of all, if there are existing forms of this type. The committeemen also determine whether a single form can be devised to replace two or more departmental or division forms.

Women in Railroad Service

THERE were 61,302 women employed by Class I railroads on October 1, 1926, as compared with 90,052 in October, 1920, according to a statement issued by the Interstate Commerce Commission as the result of a special study made at the suggestion of the Women's Bureau of the Department of Labor. This shows that women were employed in almost every branch of railroad service, including two in train service and 290 in shop work. The most numerous class shown in the commission's statement is that of clerical or semi-clerical work, in which 51,127 were employed, and the next most numerous class was that of "cleaning" 3,332. There were also 641 in the car department, 1,814 in "personal service," 295 in roundhouse work and 1,427 telegraph and telephone operators. The commission's statement follows:

The regular reports concerning railway employees published by the Interstate Commerce Commission do not distinguish as to the sex of the employees. Data regarding the employment of women were published for the years 1918 and 1919 by the United States Railroad Administration. In 1920 the Interstate Commerce Commission published a bulletin showing the number of women employed on large steam railways for four dates in that year and summarizing the Railroad Administration Statistics for 1918 and 1919. The present count was taken through Statistical Series Circular No. 16 issued, August 10, 1926, at the suggestion of the Women's Bureau in the Department of Labor. The classification of occupation is the same as that used in the 1920 Bulletin to facilitate comparisons. It differs from the classification used in the regular reports of railroad employees. There has been a general decrease in the number of women employed by railroads since 1920, the total number reported by Class I railways being 61,302 for October 1, 1926, as compared with 90,052 for October 1, 1920.

Number of Women Employed by Class I Railways on October 1, 1926, by Districts and Classes of Employment
Number of women employed on October 1, 1926

Class	Eastern district	Southern district	Western district	Total
1. Attendants:				
Bureau of information.....	42	9	18	69
Station (including station helpers).....	88	67	179	334
Storeroom.....	23	3	12	38
Tool room.....	8	...	1	9
Other attendants.....	41	9	18	68
Total.....	202	88	228	518
2. Bridge and lock tenders:				
Day work.....	...	...	...	...
Night work.....	...	...	...	...
Total.....	...	...	...	...

Class	Number of women employed on October 1, 1926			
	Eastern district	Southern district	Western district	Total
3. Car department:				
Coach and car carpenters, helpers.....	...	...	...	...
Coach and car equipment painters, helpers.....	4	...	19	23
Coach and car inspectors, helpers.....	...	...	...	...
Coach and car repairers, helpers.....	...	...	...	...
Pattern makers, helpers.....	...	...	...	...
Upholsterers and seamstresses.....	17	4	21	42
Other car work.....	...	3	22	25
Clerks.....	284	29	184	497
Laborers.....	25	18	11	54
Total.....	330	54	257	641
4. Clerical or semi-clerical:				
Accountants.....	120	99	74	293
Cashiers.....	197	106	192	495
Clerks, stenographers, typists, computer operators.....	20,513	7,259	17,022	44,794
Draftswomen and assistants.....	18	5	6	29
Telephone operators (except in train movement).....	1,695	215	712	2,622
Ticket sellers and clerks.....	178	150	129	457
Other office clerks (including operators of office equipment devices).....	1,043	403	991	2,437
Total.....	23,764	8,237	19,126	51,127
5. Cleaning:				
Car cleaners, inside.....	803	238	540	1,581
Car cleaners, outside.....	44	18	11	73
Station and office cleaners (including janitresses).....	1,061	231	355	1,647
Shop cleaners.....	...	6	3	9
Other cleaners.....	16	2	4	22
Total.....	1,924	495	913	3,332
6. Elevator operators.....	23	13	17	53
7. Messenger service:				
Day work.....	68	4	103	175
Night work.....	2	...	2	4
Total.....	70	4	105	179
8. Personal service:				
Cooks, dishwashers, stewardesses, waitresses (including dining-car service).....	288	72	592	952
Hospital nurses.....	28	21	27	76
Housekeepers.....	2	1	13	16
Laundresses, employees in linen rooms.....	39	30	225	294
Maids and matrons.....	206	91	135	432
Other service.....	23	2	19	44
Total.....	586	217	1,011	1,814
9. Roundhouse work:				
Calling crews by telephone.....	2	...	2	4
Cleaning headlights and lanterns.....	8	...	4	12
Roundhouse clerks.....	105	7	77	189
Supplying engines.....	...	...	...	...
Turntable operators.....	1	...	...	1
Wiping engines.....	5	41	19	65
Laborers.....	10	9	5	24
Total.....	131	57	107	295
10. Shopwork:				
Blacksmiths, helpers.....	3	...	...	3
Boilermakers, helpers.....	...	...	1	1
Coppersmiths, sheet-metal workers, pipe fitters, helpers.....	...	...	1	1
Electricians, helpers.....	1	...	...	1
Molders, coremakers, helpers.....	...	...	...	...
Machinists, helpers.....	6	...	6	12
Clerks.....	120	22	61	203
Laborers, inside work.....	8	32	5	45
Laborers, outside work (including scrap dock work).....	...	18	6	24
Total.....	138	72	80	290
11. Signal service:				
Maintenance.....	2	...	...	2
Manipulation, day work (except telephone).....	17	...	...	17
Manipulation, night work (except telephone).....	9	...	1	10
Total.....	28	...	1	29
12. Station agents, assistants, agent operators.....	239	307	261	807
13. Supervisors of women employees.....	31	18	95	144
14. Switch tenders and other yard work.....	...	...	...	...
15. Telegraph operators handling other than train messages:				
Day work.....	91	18	118	227
Night work.....	15	2	62	79
Total.....	106	20	180	306
16. Telegraph and telephone operators (handling train orders, blocking and reporting trains):				
Day work.....	264	102	218	584
Night work.....	133	42	362	537
Total.....	397	144	580	1,121
17. Train service.....	...	...	2	2
18. Warehouses and docks:				
Billing and report clerks (including checkers or tally clerks).....	91	37	39	167
Yard clerks, outside work.....	15	...	2	17
Laborers.....	2	3	1	6
Total.....	108	40	42	190
19. Watchwomen:				
Crossings, day work.....	167	2	7	176
Crossings, night work.....	10	...	1	11
Other watchwomen, day work.....	3	2	...	5
Other watchwomen, night work.....	...	...	...	...
Total.....	180	4	8	192
20. Other service:				
Mail carriers.....	10	6	20	36
Pumpers.....	2	3	3	10
Miscellaneous employees.....	37	41	118	216
Total.....	69	50	141	260
Grand total.....	28,326	9,822	23,154	61,302

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Chesapeake & Ohio Railway, by James Poyntz Nelson. The author is Special Engineer, Valuation, and has been connected with this railway since 1869. 193 p. Maps. Richmond, Va. Lewis Printing Company.

Forecasting Business Conditions, by Charles O. Hardy and Garfield V. Cox. Chapter XV considers railway transportation, p. 177-190, while the bibliography contains railway sources, p. 425-426. 434 p. Pub. by Macmillan, New York City. \$4.

The Geology of the Eastern Railway. Section 1. Port Harcourt to Enugu, by R. C. Wilson and A. D. N. Bain. Geological Survey of Nigeria Bulletin No. 8. Includes illustrations and a colored geological map, and an outline map of the railway. 95 p. Pub. by Geological Survey of Nigeria, Lokoja, Nigeria, Africa. 15 shillings.

Marching On, by James Boyd. A novel of the Civil War that includes descriptions of railways and railway operation in North Carolina and Virginia at that time. 426 p. Pub. by Scribner's, New York City. \$2.50.

Periodical Articles

Aviation, edited by Frank A. Tichenor. 26 articles on history, economic aspects, operating and terminal problems, training of personnel, the Trans-Atlantic and Round-the-World Flights, and regulation of air service. *Annals of the American Academy of Political and Social Science*, May, 1927, entire issue.

Effect of Electrification on the Budget and Balance Sheet of the Swiss Federal Railways for 1927, by General Management of the Federal State Railways. This note was attached to the balance sheet of the SFR and shows comparative figures for 1927, and figures for 1927 "if steam traction were in use over the whole system" concluding that "in round figures [the accounts are] 1,700,000 fr. more favorable than would be the case if only steam locomotives were employed." *Bulletin of the International Railway Congress Assn.*, April, 1927, p. 345-350.

Growing Trade of Mexico's West Coast Territory, by Leo G. Koepfle. Effect of improved railroad facilities, characteristics of traffic, etc. *Commerce Reports*, May 9, 1927, p. 335-338.

Lather, by Hugh Wiley. In this lively story a Southern Pacific engineman and fireman have quite a time reaching the war. *Saturday Evening Post*, May 7, 1927, p. 50, 52, 55, 56, 58.

The Right Bower of Management, by Raymond C. Willoughby. "Proper use of statistics." *Nation's Business*, May, 1927, p. 21-23.

Seeing Over the Telephone—A Practical Explanation of Television. In the Feb. 5 Booklist, Dr. Alexanderson's article modestly suggested that progress was being made toward television. This article describes in "laymen's language" television as achieved at present—one more way of communication. *American Review of Reviews*, May, 1927, p. 516-518.



The Pride of the Santa Fe in an Earlier Day

Looking Backward

Fifty Years Ago

A train leaving Chicago at 9 a.m. now reaches Boston, via the Hoosac tunnel route, at 9 p.m. on the second day, making the run in 36 hours, and giving evidence of the practical value of the Hoosac mountain achievement.—*Railway Age*, May 17, 1877.

The action of the Pennsylvania Railroad Company in reducing its dividends from eight to six per cent and devoting surplus earnings to the redemption of its debt is a new thing in American railway management. The general policy has been to distribute as much as possible in dividends, put the surplus, if any, into new ventures and increase the debt for the same purpose.—*Chicago Railway Review*, May 12, 1877.

The reorganized Northern Pacific continues to evince signs of a vigorous and hopeful life. The decision has been reached to shorten the connection between St. Paul and the main line 100 miles by building the Brainerd (Minn.) branch without assessing the stockholders or further bonding the Northern Pacific company. There seems to be renewed reason for the belief that this 555-mile railway will eventually be completed to the Pacific ocean.—*Railway Age*, May 17, 1877.

The annual report of the Lake Shore & Michigan Southern shows results which have had considerable effect in restoring confidence among investors. The net earnings of the year show an increase of 12.09 per cent over those of the previous year. Extremely active competition for "Centennial travel" demoralized all rates and the greater part of the passenger business on all lines was done at half of the ordinary prices during the last two thirds of the year.—*Chicago Railway Review*, May 12, 1877.

Twenty-Five Years Ago

The per diem plan of payment for the use of foreign cars seems to be growing in favor. At a recent meeting of the American Railway Association nearly 90 per cent of those present were in favor of the plan, and it is now evident that the system will go into effect on July 1.—*Railway and Engineering Review*.—May 17, 1902.

Henry Miller, assistant superintendent of the St. Louis, Keokuk & Northwestern and the Chicago, Burlington & Kansas City, has been appointed superintendent, with headquarters at Hannibal, Mo. H. M. Adams has been appointed assistant general freight agent of the Oregon Railroad & Navigation Company at Portland, Ore.—*Railroad Gazette*, May 16, 1902.

The Southern and the Louisville & Nashville are engaged in a spirited struggle for a right-of-way through the rich coal fields along the Kentucky-Tennessee line between Middlesboro, Ky., and Jellico, Tenn. For a distance of nine miles east of Jellico, through a narrow pass in the mountains, the surveys of the two companies conflict.—*Railway Age*, May 16, 1902.

Ten Years Ago

The United States Railroad Commission to Russia, headed by John F. Stevens as minister plenipotentiary, accredited to the Russian government, started from Washington for Petrograd on March 9.—*Railway Review*, May 12, 1917.

Hearings before the Interstate Commerce Commission on the applications of the railroads for authority to make a general advance in freight rates of 15 per cent were begun at Washington on May 7. "The conditions surrounding the railroads at the present time involve an immediate menace to the country at large because of inadequate facilities and insufficient credit," stated Samuel Rea, president of the Pennsylvania. Executive officers of the other eastern railroads gave testimony to the same effect.—*Railway Age Gazette*, May 11, 1917.

Odds and Ends of Railroading

Dentist—"Which tooth is it, Sam, that troubles you?"
Pullman Porter—"Lower five, suh."—Railway Life.

We wonder just how many railroad men have names appropriate to their duties. We know of a yardmaster whose name is Carr and a conductor Drawbaugh (invariably pronounced "draw-bar"). There must be many others.

From a clerk in the office of the superintendent of motive power of the Chicago & Alton to chief of police of Bloomington, Ill., is the interesting step taken by Tom Shanahan. With a fine old Irish name like that, you might know that Tom would eventually land on the force.

Among the safety verses that go on and on, we have always rather fancied this one:

Williams in a fit insane,
Thrust his head beneath a train;
You would be surprised to find
How it broadened Williams' mind.

Many years ago on the old Cincinnati Southern, a train consisting of a parlor car and an engine was run from Lexington, Ky., to Cincinnati, Ohio, at the rate of well over a mile a minute. The Negro porter who made the trip is still alive and delights to tell of it. He always finishes his yarn like this: "Boss, you knows how de rails go clickety-clack undah de cah? Well, sah, on dis trip, dey didn't go clickety. No, sah, dey jest went 'Whoosh!'"

Some newspapers are running a series called: "My Most Embarrassing Moment." There are many embarrassing moments on a railroad, but one of the worst came the way of a young trainmaster out west. He was bossing the clearing of a wreck on a high fill and one box car gave him a great deal of trouble. Finally, he had the derrick pick it up and roll it down the hill. It hit the rocks on the bottom with a resounding crash. The next day he found out that the car contained the household goods of the new general manager.

The cog and ratchet railway to the summit of Pike's Peak staged a rescue a week or two ago. Two employees of the company which operates the hotel on the summit of the mountain went up to prepare for the tourist season and were marooned there for two weeks by a blizzard. After much difficulty, the railway was able to fight the snow sufficiently to get a train through to the top and bring the men down to safety. During the time the men were marooned, an airplane twice flew over them and dropped food. This was the first time a plane had ever flown over Pike's Peak in winter.

Block Operator Nelson, of the Pennsylvania, at Catawissa, Pa., repulsed a mass attack of copperhead snakes recently, with great slaughter to the attackers. These charming creatures, in bunches of 50 or so (we take the word of the Eastern Region Pennsylvania News for it) make a practice of rolling up in a ball for the winter. In this case this colony, still dormant, was apparently loosened from its anchorage at the top of a nearby hill and rolled down. Striking a stone near "AG" tower, the members disentangled themselves and looked about for trouble, which they found quickly enough in Operator Nelson.

There is a vast difference between the characteristics of a railroad terminal of today and one, say, in the '80's. But most of the changes have been gradual so that few persons have been materially affected by any one change when it occurred. However, right now a change is taking place on some roads which is downright revolutionary to the beholder. We refer to the rapid-acting automatic bell-ringers now being applied to locomotives on several roads. Where this change has been made a terminal as a whole takes on a different characteristic sound—and one which is bound to attract the immediate attention of all but the stone-deaf.

"The Familiarity Which Breeds

Worse Than Contempt"

Under the above head *Along the Line* (N. Y., N. H. & H.) tells the story of a grade-crossing accident, involving a passenger automobile. When the occupants of the vehicle were unscrambled from its mangled parts they were recognized as the crossing watchman regularly assigned to that crossing and his wife. "How often," says *Along the Line*, "we have seen an elevator operator on his day off enjoying himself riding up and down in the car of his partner. And a taxi driver off duty riding around with one of his buddies. And the sailor on shore leave simply must find a pond and get himself into a rowboat."

We now have a crossing watchman whose chief pleasure on his day off appeared to be to wreck himself on his own crossing.

Addendum to Telephonic Pests

It is no more than fair since so many have sung their hymn of hate for their favorite pests in this column that one or two more clients be given a similar opportunity. The following is how H. Allen Monroe, chief clerk to the mechanical superintendent, B. A. R., feels about it:

Of all the telephonic pests,
The cuss who has most gall
Is he who lets her ring and ring
And doesn't answer at all.

No matter what he says to you
In language rank or fair,
Thank God, no matter what he says
So long's you know he's there.

There's nothing gets most people's goat,
Or causes half the worry
As he who let's the old phone ring
When you're really in a hurry.

Another correspondent, who wishes to be nameless, says:

These score or more are bad, 'tis true,
But the one I think most galling
Is the snooty, high-hat, lazy bird who—
'Se secretary does his calling.

Special Rates for "Hikers"

A form of excursion ticket, to the best of our knowledge unknown on this side of the Atlantic but popular in England, is the hiker's (or, more decorously, walker's) ticket. It provides for a railway journey to one point and a return trip beginning at a different station, the distance between the destination of the outbound trip and the beginning of the return journey to be covered by shanks' mare. One railway has gone so far as to issue a special booklet giving a series of interesting walks which can be made in the territory it serves.

Despite the accommodations of this character provided by the English railways, however, there is some complaint that the restrictions on such tickets are too great. The *Times* (London) ventures the opinion that "there may be depths of petty swindling to which such a ticket as most walkers would like might afford opportunity. If, however, there are not, it should be the pleasure as well as the duty of the railways to help and encourage walkers. At present a walker can often, but not always, get out on a Saturday some 30 or 40 miles from London for a very small sum; a quick train will take him to some town well beyond the suburbs; but that town is probably rather suburban itself, and the walker's desire is to escape from it without obligation to return to it at the end of his expedition. But on some lines he finds that he must walk in a circle and return to the point whence he started; while on others he may cut across country to one station but not to another, so anxious does the railway appear to wish to dictate to him his exact course."

NEWS of the WEEK



Western Pacific—Photo by H. F. O'Neil

W. H. HARLAND, senior signal engineer of the Bureau of Signals and Train Control Devices of the Interstate Commerce Commission, has resigned and has been appointed director of traffic of the District of Columbia.

AUTHORITY TO MAKE CAPITAL EXPENDITURES for non-transportation purposes, in connection with the development of air rights over terminal tracks and property at Chicago, is provided for in a bill which was introduced in the Illinois state legislature on May 5. Such construction expenditures would be allowed after investigation and approval by the Illinois Commerce Commission.

ARBITRATION PROCEEDINGS on the wage increases asked by the Brotherhood of Locomotive Firemen and Enginemen for firemen on the southeastern railways are to begin shortly in Washington, D. C., following the selection of Grafton Greene, chief justice of the supreme court of Tennessee, as the neutral arbitrator, announced on May 9 by the Board of Mediation. The other members of the board were selected some time ago; W. J. Jenks, vice-president of the Norfolk & Western, and J. C. Goff, vice-president of the brotherhood.

THE PUBLIC SERVICE COMMISSION of Pennsylvania has dismissed a complaint, presented by brakemen against the Pennsylvania Railroad, alleging that freight trains on the Pittsburgh division of that road are operated with an insufficient number of men. The commission holds that the road is not operating trains in an unsafe manner. The commission, at the same time, dismissed a complaint alleging that the Reading is operating a pole car at Newberry Junction without foot boards or sill steps. It is held that the absence of steps does not increase the hazard to employees.

Ontario Government Line to Invade Quebec

Quebec's opposition to the extension of the Temiskaming & Northern Ontario Railway, owned and operated by the Ontario government, into its territory is not

yet ended. Last year there was strenuous objection raised and the matter found its way to the Supreme Court of Canada, which decided that the railway could run over Crown lands in Quebec.

Now the Quebec government has made known the conditions upon which the Ontario railway may enter the former's territory. One of the most important provisions is that limit holders in Quebec province must be compensated, but the Crown lands will be available free. Quebec's main objection, of course, has its source in the fact that the Ontario railway will tap the rapidly developing gold fields in Rouyn, in northwestern Quebec.

A contract has been signed between the Ontario government and the Quebec government providing for the invasion of the Ontario railway.

The line will extend from Cheminees, Ont., to Lake Obisko, Que., about 30 miles. The road will be extended northward toward James Bay this summer from the present rail-head to Coral Falls. Work will commence at once, according to L. T. Martin, one of the commissioners and vice-presidents of the road. Rails have been purchased from the Algoma Steel Company. The contract calls for completion of the extension on December 1.

Wage Increase on C. N. R.

A minority report by Peter White of Toronto, representative of the management on the board of conciliation dealing with the wage dispute between the Canadian National and certain of its employees, recommends an increase of 2 cents an hour for hourly-rated employees and an equivalent increase for monthly-rated employees.

This recommendation is in opposition to the majority report recommending an increase of four cents an hour to hourly-rated employees and a proportionate increase to monthly-rated workers.

Mr. White agrees, however, with the recommendation in the majority report for an additional increase of "one-half cent per hour for hourly-rated employees and the equivalent to monthly-rated employees" to remove inequalities between different groups of the same class of employees, "particularly between certain employees on

the old Grand Trunk system and the rest of the system."

The employees affected in the present wage dispute are clerks, freight handlers, warehousemen, passenger station employees, stationary engineers, stationary firemen, classified and unclassified, and laborers in and around shops and warehouses, as represented by the Canadian Brotherhood of Railroad Employees. It is expected that the board, which is composed of William J. Donovan, Winnipeg, chairman; Howard S. Ross, Montreal, nominee of the employees, and Peter White, Toronto representative of the company, will shortly make a further report to Hon. Peter Heenan, Minister of Labor, on the question of working conditions.

An International Railway Commission Suggested

The increasing exchange of traffic between Canada and the United States and the consequent growing necessity of greater co-operation and co-ordination in the handling of that traffic and in the matter of rates and regulation has suggested the feasibility of an international railway board. It is known that such a suggestion has been made tentatively to Harrison A. McKeown, Chairman of the Dominion Railway Board, by Joseph B. Eastman, Chairman of the Interstate Commerce Commission. Moreover, the latter has communicated to the Dominion Board suggestions and information in regard to accounting methods for the Canadian railways. There is still lack of sufficient uniformity in accounting on the Canadian roads.

While the members of the Dominion Board have not yet expressed their views on an international board the feeling in Ottawa is that some day such a body will be inevitable. This has been given emphasis by the fact that New Brunswick shippers of lumber and other forest products have asked the Board to carefully consider international rates on their products, a large amount of which is shipped into the United States over the Maine border.

Attention has also been called to state—
(Continued on page 1474)

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1927

Name of road	Average mileage operated during period	Operating revenues				Operating expenses				Operating ratio	Net from railway operation	Operating income (or loss)	Net after rents	Net after rents, 1926
		Freight	Passenger	Total	Maintenance of way and structures	Traffic	Trans- portation	General	Total					
Akron, Canton & Youngstown.....	Mar. 171	\$284,145	\$304	\$284,289	\$82,730	\$10,575	\$80,533	\$15,902	\$100,917	64.4	\$105,382	\$84,982	\$53,524	\$40,028
Atchafalaya, Topeka & Santa Fe.....	3 mos. 171	12,724,106	934	12,725,040	817,587	31,656	236,879	47,165	277,139	64.4	280,448	229,223	136,711	79,771
Atchafalaya, Topeka & Santa Fe.....	Mar. 9,422	3,167,294	3,167,294	6,334,588	2,542,727	407,133	3,349,817	404,954	3,754,771	71.1	4,804,053	3,463,183	3,411,167	3,242,571
Atchafalaya, Topeka & Santa Fe.....	3 mos. 9,390	3,167,294	3,167,294	6,334,588	2,542,727	407,133	3,349,817	404,954	3,754,771	71.1	4,804,053	3,463,183	3,411,167	3,242,571
Gulf, Colorado & Santa Fe.....	Mar. 1,944	2,767,683	193,827	2,961,510	565,370	54,100	1,042,268	64,096	1,106,364	76.8	1,170,460	634,774	424,895	159,327
Panhandle & Santa Fe.....	3 mos. 1,944	8,477,042	681,366	9,158,408	1,546,312	163,245	3,292,374	124,335	3,416,709	74.5	2,437,000	2,177,192	1,551,932	414,966
Atlanta & West Point.....	Mar. 93	178,963	60,121	239,084	24,307	12,045	99,708	13,236	112,944	73.4	126,180	54,968	39,445	26,946
Western of Alabama.....	3 mos. 133	490,216	189,723	679,939	75,237	35,852	284,432	39,593	324,025	75.6	187,895	137,569	95,003	79,399
Atlanta, Birmingham & Coast.....	3 mos. 133	194,782	56,498	251,280	49,795	12,461	188,080	36,943	225,023	79.7	56,293	42,225	44,403	95,821
Atlantic Coast Line.....	3 mos. 133	532,618	176,157	708,775	781,016	37,353	246,850	36,943	616,685	79.0	164,331	121,637	125,653	190,690
Charleston & Western Carolina.....	Mar. 342	332,772	16,798	349,570	87,747	29,214	183,230	19,551	202,781	90.5	46,733	32,402	12,194	58,368
Baltimore & Ohio.....	3 mos. 342	881,458	52,125	933,583	335,740	83,945	582,244	56,751	639,000	96.6	45,507	2,534	43,484	31,007
Baltimore & Ohio.....	Mar. 5,322	17,886,029	1,861,197	19,747,226	1,087,788	1,331,916	7,440,294	182,491	8,622,785	68.8	2,701,400	2,148,417	2,026,894	7,806,536
Baltimore & Ohio.....	3 mos. 5,322	17,886,029	1,861,197	19,747,226	1,087,788	1,331,916	7,440,294	182,491	8,622,785	68.8	2,701,400	2,148,417	2,026,894	7,806,536
Baltimore & Ohio.....	Mar. 75	349,169	48,822	397,991	113,720	29,214	183,230	19,551	202,781	90.5	46,733	32,402	12,194	58,368
Staten Island Rapid Transit.....	3 mos. 75	110,938	113,842	224,780	250,650	6,190	322,384	15,376	337,754	77.3	146,767	95,742	13,607	45,739
Bangor & Aroostook.....	Mar. 613	840,452	92,997	933,449	107,214	4,793	207,840	25,704	233,544	50.0	481,241	395,279	399,042	318,309
Belt Ry. Co. of Chicago.....	3 mos. 613	2,186,673	249,806	2,436,479	324,756	15,128	610,918	71,569	682,487	58.9	1,109,391	897,913	942,729	615,255
Beaumont & Lake Erie.....	Mar. 228	2,574,463	39,162	2,613,625	26,879	3,527	272,251	9,542	281,793	68.1	593,601	454,344	416,141	486,389
Bingham & Garfield.....	3 mos. 32	.....	.....	1,752,813	116,954	10,491	822,970	29,700	852,670	78.4	29,409	6,532	56,348	47,267
Boston & Maine.....	Mar. 2,111	4,359,183	1,503,314	5,862,497	639,694	71,382	2,631,383	241,686	2,873,069	75.1	1,658,384	1,360,465	1,132,691	1,696,662
Brooklyn Eastern Dist. Term.....	3 mos. 2,111	11,941,993	4,741,117	16,683,110	1,964,342	226,018	7,810,465	683,582	8,494,052	78.0	4,133,889	3,238,673	2,537,775	2,723,164
Buffalo & Susquehanna.....	Mar. 253	144,647	2,584	147,231	27,938	1,639	149,209	7,952	157,161	94.0	9,143	7,043	25,266	601
Buffalo, Rochester & Pittsburgh.....	3 mos. 253	408,758	7,771	416,529	82,440	5,079	140,586	23,753	164,339	97.2	12,096	5,796	64,646	4,282
Canadian Pacific Lines in Maine.....	Mar. 233	876,008	116,770	992,778	147,693	32,022	618,489	47,961	666,450	81.8	310,340	260,343	270,610	267,848
Canadian Pacific Lines in Vermont.....	3 mos. 85	129,226	30,960	160,186	16,198	2,129	105,473	13,561	119,034	92.5	13,601	8,851	12,987	.....
Central of Georgia.....	Mar. 1,911	1,995,488	392,309	2,387,797	299,674	82,746	923,069	100,030	1,023,105	69.7	115,555	102,265	81,339	42,429
Central New Jersey.....	3 mos. 1,911	5,811,654	1,253,096	7,064,750	724,271	134,766	2,690,843	314,055	3,004,898	74.4	1,852,607	1,468,630	1,362,524	1,364,234
Central Vermont.....	Mar. 433	1,478,111	320,254	1,798,365	856,841	45,447	1,971,494	115,648	2,087,142	73.0	718,899	601,009	541,086	555,747
Chesapeake & Ohio.....	3 mos. 2,650	10,655,372	677,047	11,332,419	1,676,228	128,659	5,879,346	368,458	6,247,805	82.7	2,295,568	1,628,737	1,194,752	676,058
Chicago & Alton.....	Mar. 1,055	1,982,591	489,001	2,471,592	229,308	79,669	970,075	97,345	1,067,420	71.4	718,899	601,009	541,086	555,747
Chicago & Eastern Illinois.....	3 mos. 1,055	5,285,076	1,525,873	6,810,949	660,817	79,016	2,849,448	219,219	3,068,667	75.0	1,854,684	1,468,630	1,362,524	1,364,234
Chicago & North Western.....	3 mos. 8,463	8,817,773	1,953,884	10,771,657	2,653,007	250,000	2,903,007	212,693	3,115,700	80.0	1,434,941	1,087,828	716,747	427,186
Chicago & Illinois Midland.....	Mar. 133	223,469	10,773	234,242	38,974	6,429	174,701	12,317	187,018	73.2	63,989	57,092	51,818	34,994
Chicago & North Western.....	3 mos. 8,463	8,817,773	1,953,884	10,771,657	2,653,007	250,000	2,903,007	212,693	3,115,700	80.0	1,434,941	1,087,828	716,747	427,186
Chicago & North Western.....	3 mos. 8,463	8,817,773	1,953,884	10,771,657	2,653,007	250,000	2,903,007	212,693	3,115,700	80.0	1,434,941	1,087,828	716,747	427,186

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road	Average mileage operated during period.	Operating revenues			Maintenance of way and structures		Operating expenses		Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after taxes.	Net after 1926.
		Freight.	Passenger.	Total (inc. misc.).	Equip-ment.	Traffic.	Trans- portation.	General.						Total.
Chicago, Burlington & Quincy.....	Mar. 3 mos.	9,391	\$10,515,037	\$1,594,667	\$12,556,509	\$1,277,418	\$2,138,343	\$243,883	\$4,644,953	\$368,897	\$8,759,389	\$3,420,454	\$3,103,509
Chicago Great Western.....	Mar. 3 mos.	9,391	28,483,746	4,997,799	36,823,228	3,631,571	6,399,061	749,000	13,728,888	1,075,025	25,800,309	8,180,654	7,294,864
Chicago & North Western.....	Mar. 3 mos.	1,496	1,609,132	261,228	2,034,432	182,586	401,072	75,045	838,527	61,529	1,369,255	465,177	249,772
Chicago, Indianapolis & Louisville.....	Mar. 3 mos.	1,496	4,413,662	807,602	5,669,165	339,437	1,154,856	223,772	2,455,956	171,924	4,359,110	830,650	415,771
Chicago, Milwaukee & St. Paul.....	Mar. 3 mos.	1,496	1,233,549	187,866	1,661,962	157,451	364,614	39,785	599,151	129,552	1,209,542	454,403	281,273
Chicago River & Indiana.....	Mar. 3 mos.	1,496	3,351,413	585,343	4,526,881	402,684	1,016,822	116,855	1,756,057	110,609	3,416,272	1,170,405	583,955
Chicago, Rock Island & Pacific.....	Mar. 3 mos.	1,496	10,332,941	1,408,364	12,209,105	1,622,424	3,260,475	357,379	5,916,074	423,861	10,782,213	3,271,073	1,311,386
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.	1,496	4,022,280	36,591,361	4,022,280	9,678,790	900,266	14,944,334	1,747,728	30,308,434	6,282,927	4,034,291	2,784,385
Chicago, St. Paul, Minn. & Omaha.....	Mar. 3 mos.												

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road	Average mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Net from railway operation	Operating income (or loss)	Net after rents	Net after taxes
		Freight	Passenger	Total (inc. misc.)	Way and structures	Maintenance of equip.	Traffic					
N. Y., Susquehanna & Western.....Mar.	114	\$312,858	\$46,989	\$359,847	\$44,159	\$74,005	\$5,199	86.7	\$55,252	\$26,576	\$8,117	\$104,900
Evansville, Indianapolis & Terre Haute.....Mar.	146	935,972	144,134	1,080,106	146,768	216,944	15,208	90.4	116,026	30,302	5,001	16,143
Florida East Coast.....Mar.	846	1,288,889	759,002	2,047,891	417,665	336,247	35,572	57.2	708,214	551,718	391,742	1,009,866
Fort Smith & Western.....Mar.	249	146,287	120,814	267,101	1,098,698	946,739	114,804	70.2	1,940,127	1,580,001	1,020,274	2,370,328
Galveston Wharf.....Mar.	13	.....	.....	.....	80,173	97,813	17,106	81.0	88,522	4,451	35,498	3,018
Georgia R. R.....Mar.	328	415,011	70,239	485,250	50,359	6,088	1,830	60.0	77,368	60,368	60,033	4,374
Georgia & Florida.....Mar.	445	180,997	17,235	200,232	14,774	14,774	4,782	57.2	232,839	181,839	181,489	29,386
Grand Trunk Western.....Mar.	347	1,543,173	150,666	1,693,839	33,056	96,611	23,251	77.7	116,217	100,321	111,637	123,024
Atlantic & St. Lawrence.....Mar.	166	602,070	94,066	696,136	1,667,235	361,641	40,816	82.5	247,810	211,849	245,758	263,159
Chic., Det. & Canada Gr. Tr. Jct. Mar.	59	342,172	1,202	343,374	34,727	19,658	12,999	73.6	1,304,053	1,051,812	740,375	648,756
Detroit, Grand Haven & Mil.....Mar.	189	652,034	29,377	681,411	38,351	23,388	10,282	71.9	58,090	50,390	39,337	34,558
Great Northern.....Mar.	8,164	6,205,124	974,646	7,179,770	185,186	172,508	36,652	76.8	119,320	96,120	79,956	67,468
Green Bay & Western.....Mar.	234	128,626	8,751	137,377	65,239	59,804	12,673	73.1	308,132	292,600	173,915	66,608
Gulf & Ship Island.....Mar.	307	345,659	25,114	370,773	149,186	172,508	36,652	73.1	680,406	643,532	342,512	263,828
Gulf, Mobile & Northern.....Mar.	348	1,513,804	63,732	1,577,536	131,949	51,703	15,286	75.4	1,986,021	1,833,590	1,133,741	1,003,642
Hocking Valley.....Mar.	348	3,935,231	202,967	4,138,198	487,386	1,146,934	18,812	81.0	4,037,142	1,898,601	1,998,600	2,629,141
Illinois Central.....Mar.	4,874	10,849,069	1,963,831	12,812,900	21,024	24,579	4,647	73.8	37,664	29,664	25,908	42,215
Yazoo & Mississippi Valley.....Mar.	1,710	1,753,717	327,097	2,080,814	58,449	62,873	13,240	76.6	91,282	67,282	60,848	77,560
Illinois Central System.....Mar.	6,584	12,653,174	2,294,842	14,948,016	171,048	336,738	30,724	95.1	49,446	22,085	64,410	171,303
Kansas City, Mexico & Orient.....Mar.	272	2,564,149	5,663	2,569,812	100,345	49,084	8,883	72.5	3,775,520	2,796,963	2,657,335	2,141,004
Kansas City Southern.....Mar.	784	3,652,868	311,387	3,964,255	1,156,999	1,184,763	148,917	74.2	9,958,460	7,218,913	6,928,333	6,801,856
Kans. City, Mex. & Orient of Tex. Mar.	465	525,019	21,487	546,506	158,988	75,737	10,302	73.7	4,208,498	3,054,688	2,858,114	2,363,870
Kansas City Southern.....Mar.	784	1,327,651	97,019	1,424,670	169,179	216,392	27,760	75.0	11,351,543	8,076,546	7,625,636	7,573,434
Texasarkana & Ft. Smith.....Mar.	81	236,368	9,226	245,594	40,265	12,190	5,777	97.0	8,358	3,945	13,727	3,610
Kansas Oklahoma & Gulf.....Mar.	326	636,026	28,342	664,368	89,959	58,188	17,660	104.0	27,232	39,803	4,697	4,696
Lake Superior & Ishpeming.....Mar.	160	60,158	4,407	64,565	44,368	89,210	26,820	83.9	90,310	83,277	2,397	6,539
Lake Terminal.....Mar.	13	.....	.....	.....	19,195	21,316	2,121	82.0	259,731	238,665	43,411	27,133
Lehigh & Hudson River.....Mar.	96	263,489	1,790	265,279	27,124	44,881	1,893	67.2	316,399	405,594	349,921	387,220
Lehigh & New England.....Mar.	216	416,011	1,304	417,315	82,968	131,718	5,816	68.2	1,401,797	1,070,159	946,288	1,063,326
Lehigh Valley.....Mar.	1,363	5,103,451	520,905	5,624,356	1,174,048	1,048,782	174,227	55.8	115,526	100,502	72,785	91,720
Louisiana & Arkansas.....Mar.	302	902,418	44,629	947,047	184,274	194,907	35,075	57.8	306,311	255,608	157,604	196,985
								132.7	70,204	38,812	108,913	3,071
								116.8	113,617	142,821	196,706	5,914
								140.8	27,948	39,547	42,437	47,885
								142.6	83,103	118,102	122,959	132,185
								106.0	5,544	10,841	14,504	2,132
								98.9	3,083	15,543	11,064	16,254
								66.7	92,559	75,559	53,542	86,457
								70.0	242,680	197,511	129,595	108,708
								73.9	110,844	94,177	87,784	167,719
								76.7	273,015	228,658	233,037	121,313
								82.5	1,079,176	798,434	616,114	1,366,159
								84.6	2,698,644	1,951,382	1,261,526	788,246
								76.7	73,777	47,359	33,977	78,419
								77.5	218,629	135,943	95,311	196,993

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road	Average mileage operated during period	Operating revenues				Operating expenses				Net from railway operation	Operating income (or loss)	Net after rents	Net after taxes
		Freight	Passenger	Total	(Inc. misc.)	Way and structures	Maintenance of equipment	Traffic	Trans-shipment				
Louisiana Ry. & Nav. Co.	337	\$251,783	\$279,389	\$531,172		\$13,802	\$39,371	\$12,032	\$127,930	\$9,996	\$241,960	\$15,939	\$59,522
Louisiana Ry. & Nav. Co.	337	791,450	43,597	835,047		185,011	124,202	35,492	409,566	30,030	778,600	56,924	135,468
Louisiana Ry. & Nav. Co. of Tex.	206	88,357	3,821	92,178		18,723	13,224	3,129	45,093	6,487	86,647	12,038	13,363
Louisiana Ry. & Nav. Co. of Tex.	206	259,754	13,329	273,083		72,313	40,247	7,980	130,447	18,743	265,563	40,598	38,871
Louisville & Nashville	5,059	10,023,676	1,642,785	12,300,196	1,912,748	2,981,474	249,421	4,366,802	348,000	9,898,354	1,891,800	2,499,199	6,471,269
Louisville & Nashville	5,059	28,389,558	5,122,928	35,396,111	5,426,483	8,381,886	821,715	12,730,344	995,088	28,478,995	5,279,713	5,128,346	80,899
Louisville, Henderson & St. Louis	199	288,384	48,085	352,043	55,375	55,405	111,715	7,476	111,715	11,784	284,755	75,127	80,899
Louisville, Henderson & St. Louis	199	831,789	146,629	1,025,443	160,559	155,852	326,277	21,126	326,277	34,457	698,271	236,542	260,798
Maine Central	1,121	1,450,415	343,482	1,952,246	256,006	349,976	349,976	13,209	719,882	75,773	1,414,788	365,942	353,940
Maine Central	1,121	4,077,468	964,638	5,468,407	734,163	962,550	962,550	39,415	2,159,153	174,339	4,088,756	858,551	669,551
Midland Valley	364	281,993	28,792	322,772	61,635	33,205	106,642	7,158	82,443	16,720	201,261	84,253	106,871
Midland Valley	364	825,415	91,751	953,568	120,575	106,642	217,759	258,011	47,986	554,938	398,630	285,268	318,547
Minneapolis St. Louis	1,627	1,038,728	96,621	1,194,063	155,791	295,668	35,531	570,032	1,100,819	45,437	1,100,819	16,278	32,978
Minneapolis St. Louis	1,627	2,859,426	289,408	3,321,268	369,304	815,361	106,400	1,670,454	3,090,956	134,231	3,090,956	47,527	141,062
Minneapolis, St. Paul & S. S. Marie	4,396	2,799,183	431,290	3,487,700	464,925	786,325	70,411	1,437,470	2,884,888	116,628	3,784,804	268,544	245,169
Minneapolis, St. Paul & S. S. Marie	4,396	7,793,343	1,368,312	9,905,444	1,285,792	2,197,865	206,214	4,296,661	8,364,094	340,022	8,364,094	551,278	568,986
Duluth, South Shore & Atlantic	589	367,139	71,673	464,607	55,811	72,505	9,150	181,851	10,920	334,991	100,601	80,343	8,242
Duluth, South Shore & Atlantic	589	919,043	121,519	1,213,319	161,591	205,727	24,629	554,238	36,777	990,820	147,484	18,258	30,015
Spokane International	165	81,614	12,159	99,853	16,278	7,423	3,476	32,762	6,668	67,369	32,284	26,596	20,015
Spokane International	165	244,768	31,961	293,736	50,696	24,853	10,712	103,369	19,395	212,084	81,652	44,865	69,173
Mississippi Central	161	134,989	8,300	147,528	19,374	25,766	8,414	38,020	2,372	98,944	48,584	40,375	33,982
Mississippi Central	161	380,731	26,556	410,258	60,400	75,488	25,124	112,352	22,740	395,973	131,342	101,342	103,922
Missouri & North Arkansas	364	136,668	15,377	159,088	33,011	17,787	9,806	57,442	7,480	126,129	32,679	20,214	—12,033
Missouri & North Arkansas	364	366,001	46,740	432,044	101,492	50,880	29,304	162,778	22,026	366,480	58,291	28,725	—48,132
Missouri-Kansas-Texas	1,799	2,521,376	319,202	3,058,702	382,503	605,353	63,632	788,227	1,045,344	1,815,116	1,213,586	979,604	756,318
Missouri-Kansas-Texas	1,799	6,983,742	1,031,111	8,608,704	793,171	1,974,852	196,697	2,282,640	2,888,309	3,056,438	2,430,057	2,503,736	2,338,579
Missouri-Kansas-Texas	1,389	1,367,327	320,334	1,832,776	327,961	286,554	51,450	434,396	69,801	1,592,263	340,533	123,402	165,270
Missouri-Kansas-Texas	1,389	4,062,461	976,858	5,466,677	776,861	840,717	153,564	2,189,074	198,564	4,198,178	1,111,128	601,981	506,778
Missouri Pacific	7,354	9,106,474	1,219,744	11,188,032	1,638,292	2,218,248	276,969	4,031,552	3,683,938	7,674,094	2,090,779	1,822,716	1,564,909
Missouri Pacific	7,354	25,706,326	3,780,435	31,887,221	4,142,269	6,380,060	861,837	11,865,971	10,542,264	24,428,902	6,095,446	4,925,179	4,550,202
Gulf Coast Lines	973	1,325,831	174,269	1,575,801	269,116	269,116	327,274	40,119	485,323	54,721	1,087,571	305,298	315,990
Gulf Coast Lines	973	3,669,055	548,488	4,430,336	792,308	684,622	117,069	1,079,187	1,079,187	1,321,149	1,126,921	804,872	667,359
International-Great Northern	1,159	1,256,730	207,619	1,617,785	270,627	297,958	33,387	668,982	59,703	1,326,881	290,904	152,705	138,688
International-Great Northern	1,159	3,566,859	619,613	4,649,144	773,199	838,102	101,584	1,925,044	180,665	3,784,727	737,030	426,813	291,910
San Antonio, Uvalde & Gulf	318	151,713	21,679	187,965	38,946	22,028	5,799	49,299	6,735	123,490	64,475	32,275	19,648
San Antonio, Uvalde & Gulf	318	394,299	73,129	507,703	114,112	65,687	14,412	144,148	17,174	357,774	149,929	60,252	66,761
Texas & Pacific	1,954	2,701,916	488,652	3,406,254	557,611	579,372	72,812	1,161,312	1,065,233	2,478,451	721,503	629,706	347,303
Texas & Pacific	1,954	7,389,325	1,447,706	9,432,820	1,560,239	1,645,433	215,975	3,380,951	298,605	7,103,255	1,858,703	1,444,277	1,137,323
Mobile & Ohio	1,161	1,453,421	105,938	1,648,576	222,617	259,955	35,357	368,983	48,228	1,582,833	775,098	364,853	369,101
Mobile & Ohio	1,161	3,842,153	326,744	4,406,559	667,344	776,776	159,068	1,641,941	138,903	3,378,498	779,570	663,826	908,770
Monongahela	169	710,038	26,782	743,518	75,400	65,000	9,251	198,709	9,823	346,289	396,229	247,757	153,565
Monongahela	169	1,958,987	83,862	2,040,974	225,000	195,000	3,170	570,143	29,329	1,821,896	1,030,078	642,297	560,130
Monongahela Connecting	7	.....	.....	.....	15,798	33,081	374	79,606	10,144	131,451	64,324	49,264	37,801
Monongahela Connecting	7	.....	.....	.....	539,657	96,997	1,123	237,891	10,144	396,537	143,120	104,355	118,628
Montour	57	149,907	439	151,073	22,740	48,431	1,406	37,723	10,905	115,255	35,818	58,069	6,872
Montour	57	393,564	1,358	397,247	54,406	141,159	3,716	91,024	25,155	315,460	81,787	148,214	19,617
Nashville, Chatt. & St. Louis	1,259	1,538,084	311,705	1,997,610	256,510	396,889	87,229	721,191	79,295	1,546,755	380,791	403,936	415,009
Nashville, Chatt. & St. Louis	1,259	4,141,360	1,000,225	5,554,910	703,757	1,209,758	261,774	2,131,308	241,572	4,569,240	985,670	858,274	1,040,680
Nevada Northern	165	62,780	6,401	77,183	11,854	4,744	848	16,258	4,478	38,338	38,845	32,388	20,677
Nevada Northern	165	203,782	20,335	245,360	37,415	14,761	2,840	50,026	13,489	119,024	126,336	105,161	73,326
Newburgh & South Shore	7	.....	.....	.....	145,694	18,481	.....	65,324	3,888	128,082	17,612	18,247	41,823
Newburgh & South Shore	7	.....	.....	.....	398,917	40,518	.....	181,694	12,045	352,907	46,010	38,805	75,882
New Orleans Great Northern	274	260,212	23,213	293,460	44,223	53,646	7,992	76,701	11,419	192,887	100,573	61,006	39,074
New Orleans Great Northern	274	731,448	70,326	828,791	122,316	152,957	22,489	228,679	32,193	556,703	272,088	150,580	153,867
New York Central	6,925	22,019,076	7,019,171	33,116,389	4,603,237	7,130,633	391,225	11,838,551	1,159,792	25,546,557	7,569,832	5,139,040	5,480,562
New York Central	6,925	59,983,601	22,444,949	93,716,382	11,829,736	20,088,926	1,183,313	35,309,448	3,663,339	73,400,340	20,316,042	13,119,099	13,862,750
Cincinnati Northern	244	407,502	5,372	412,874	42,503	79,188	6,556	120,731	11,056	259,229	150,936	90,148	88,944
Cincinnati Northern	244	1,138,150	17,546	1,172,641	122,249	152,940	19,057	394,062	33,478	792,030	305,359	208,086	241,815
Cleve., Cin., Chicago & St. Louis	2,397	6,490,669	1,177,176	8,327,961	803,636	1,680,523	151,060	5,886,396	283,457	7,441,565	1,464,171	1,835,738	1,441,048
Cleve., Cin., Chicago & St. Louis	2,397	17,384,848	3,695,086	22,854,962	2,234,499	5,025,644	435,212	8,711,675	830,467	17,448,663	5,406,299	3,881,178	3,736,040

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road	Average mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Net from railway operation	Operating income (or loss)	Net after taxes, 1926
		Freight	Passenger	Total (inc. misc.)	Way and structures	Maintenance of equip.	Traffic				
Indiana Harbor Belt	116	\$1,061,988	\$137,628	\$1,200,616	\$137,628	\$137,628	\$4,616	71.3	\$304,500	\$248,742	\$216,101
Michigan Central	1,855	\$5,608,751	\$1,341,789	\$6,950,540	\$5,608,751	\$5,608,751	\$12,172	76.6	6,804,088	556,697	\$404,086
	3 mos.	17,998,045	4,477,585	22,475,630	17,998,045	17,998,045	43,858	70.0	20,558,112	1,927,518	1,927,518
	3 mos.	17,998,045	4,477,585	22,475,630	17,998,045	17,998,045	43,858	70.0	20,558,112	1,927,518	1,927,518
Pittsburgh & Lake Erie	231	\$2,597,340	\$223,384	\$2,820,724	\$223,384	\$223,384	\$3,684	82.1	\$20,844	\$354,778	\$663,251
New York, Chicago & St. Louis	1,691	\$7,283,370	\$1,011,581	\$8,294,951	\$7,283,370	\$7,283,370	\$12,624	85.6	1,917,771	1,716,610	1,882,029
	3 mos.	4,479,367	1,586,806	6,066,173	4,479,367	4,479,367	12,624	85.6	1,917,771	1,716,610	1,882,029
	3 mos.	12,479,355	3,777,074	16,256,429	12,479,355	12,479,355	36,578	73.7	3,478,750	2,672,624	2,102,395
N. Y., New Haven & Hartford	1,911	\$5,974,430	\$3,805,156	\$9,779,586	\$5,974,430	\$5,974,430	\$7,423	72.7	3,023,516	2,510,165	1,893,260
Central New England	1,911	\$5,974,430	\$3,805,156	\$9,779,586	\$5,974,430	\$5,974,430	\$7,423	72.7	3,023,516	2,510,165	1,893,260
	3 mos.	1,729,652	7,080	1,736,732	1,729,652	1,729,652	21,223	72.0	205,945	401,266	235,881
New York Connecting	20	\$251,661	.....	\$251,661	.....	.....	.....	31.8	195,645	155,145	133,443
New York, Ontario & Western	569	\$607,109	.....	\$607,109	.....	.....	.....	38.6	481,014	359,514	302,239
	3 mos.	1,644,181	233,090	1,877,271	1,644,181	1,644,181	53,603	107.6	178,916	359,797	359,797
Norfolk & Western	2,241	\$8,640,217	\$45,614	\$8,685,831	\$8,640,217	\$8,640,217	\$108,977	61.6	3,682,661	2,831,704	1,046,584
Norfolk Southern	931	\$7,741,172	\$1,721,965	\$9,463,137	\$7,741,172	\$7,741,172	\$23,628	66.9	9,438,521	6,886,843	7,923,240
	3 mos.	2,085,240	145,424	2,230,664	2,085,240	2,085,240	880,982	70.6	693,664	547,418	447,798
Northern Pacific	6,670	\$5,819,419	\$79,608	\$5,899,027	\$5,819,419	\$5,819,419	\$175,102	78.1	1,608,920	335,636	1,253,491
Northwestern Pacific	477	\$266,141	\$133,076	\$399,217	\$266,141	\$266,141	\$21,957	82.8	3,334,114	1,340,849	2,291,955
	3 mos.	713,998	369,779	1,083,777	713,998	713,998	608,062	101.5	17,793	139,995	163,768
Pennsylvania R. R.	10,520	\$42,745,394	\$10,907,491	\$53,652,885	\$42,745,394	\$42,745,394	\$2,712,065	74.5	14,991,788	12,530,678	11,500,880
Baltimore, Chesapeake & Atlantic	130	\$168,926	\$6,875	\$175,801	\$168,926	\$168,926	\$1,535	132.1	30,323	27,079,747	23,363,362
	3 mos.	1,200,498	1,118,108	2,318,606	1,200,498	1,200,498	4,400	143.1	102,803	102,901	105,647
Long Island	401	\$2,800,267	\$1,294,989	\$4,095,256	\$2,800,267	\$2,800,267	\$30,279	92.0	240,626	155,185	84,649
West Jersey & Seashore	378	\$430,232	\$81,969	\$512,201	\$430,232	\$430,232	\$15,219	95.8	872,818	672,948	528,401
	3 mos.	1,200,498	1,118,108	2,318,606	1,200,498	1,200,498	4,400	99.7	8,136	7,009	21,955
Peoria & Pekin Union	19	\$32,701	\$3,446	\$36,147	\$32,701	\$32,701	\$1,142	62.1	66,944	49,944	64,278
Pere Marquette	2,243	\$4,713,763	\$241,403	\$4,955,166	\$4,713,763	\$4,713,763	\$61,660	66.8	1,591,137	108,137	157,785
	3 mos.	8,987,834	725,616	9,713,450	8,987,834	8,987,834	172,998	70.9	2,993,889	2,418,922	2,134,816
Pittsburgh & Shawmut	102	\$159,323	\$6,885	\$166,208	\$159,323	\$159,323	\$6,521	77.3	38,245	37,098	41,928
Pittsburgh & West Virginia	92	\$471,823	\$17,122	\$488,945	\$471,823	\$471,823	\$5,571	83.8	76,940	73,544	99,220
	3 mos.	1,309,877	18,394	1,328,271	1,309,877	1,309,877	27,753	50.1	711,637	517,778	771,998
Pittsburgh, Shawmut & Northern	188	\$174,506	\$3,272	\$177,778	\$174,506	\$174,506	\$1,604	76.4	41,116	39,888	30,881
Quincy, Omaha & Kansas City	249	\$49,149	\$3,698	\$52,847	\$49,149	\$49,149	\$709	78.5	112,660	103,475	71,291
	3 mos.	130,303	40,708	171,011	130,303	130,303	3,359	117.9	31,963	51,604	59,596
Reading	1,139	\$6,980,927	\$27,902	\$7,008,829	\$6,980,927	\$6,980,927	\$79,960	76.8	1,871,722	1,233,466	1,413,872
Atlantic City	161	\$141,076	\$108,467	\$249,543	\$141,076	\$141,076	\$4,816	122.0	5,106,121	3,797,235	3,938,651
	3 mos.	379,375	310,784	690,159	379,375	379,375	14,682	133.3	245,122	347,869	411,563
Perkerson	41	\$93,749	\$3,769	\$97,518	\$93,749	\$93,749	\$1,111	62.8	37,084	33,084	25,276
Port Reading	19	\$163,199	.....	\$163,199	.....	.....	.....	60.3	117,795	101,895	82,211
	3 mos.	502,237	.....	502,237	502,237	502,237	687	47.8	117,578	101,807	39,794
Richmond, Fred'kburg & Potomac	117	\$320,618	\$124,229	\$444,847	\$320,618	\$320,618	\$26,179	65.7	393,290	310,838	241,671
Rutland	413	\$308,535	\$95,631	\$404,166	\$308,535	\$308,535	\$10,498	81.8	203,393	128,675	157,658
	3 mos.	906,768	294,494	1,201,262	906,768	906,768	30,934	86.5	203,393	128,675	157,658
St. Louis-San Francisco	4,951	\$5,624,042	\$1,115,809	\$6,739,851	\$5,624,042	\$5,624,042	\$121,473	70.1	2,159,863	1,777,944	1,845,182
	3 mos.	15,671,238	3,448,712	19,119,950	15,671,238	15,671,238	341,456	69.9	6,147,724	4,972,741	5,209,809
Ft. Worth & Rio Grande	233	\$77,147	\$15,914	\$93,061	\$77,147	\$77,147	\$3,415	110.1	10,463	14,515	22,676
	3 mos.	224,745	47,424	272,169	224,745	224,745	9,937	103.8	11,350	23,610	46,127
St. Louis, San Francisco & Texas	137	\$148,117	\$15,098	\$163,215	\$148,117	\$148,117	\$5,261	81.6	30,927	28,374	5,640
	3 mos.	437,680	49,999	487,679	437,680	437,680	15,482	77.3	112,125	104,477	34,416
St. Louis Southwestern	940	\$3,744,533	\$296,305	\$4,040,838	\$3,744,533	\$3,744,533	\$182,225	66.1	1,441,223	1,270,687	1,018,424
	3 mos.	1,099,938	186,438	1,286,376	1,099,938	1,099,938	2,807,504	66.1	1,441,223	1,270,687	1,018,424

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road	Average mileage operated during period	Operating revenues				Operating expenses				Operating ratio	Net from railway operation	Operating income (or loss)	Net after taxes	Net after 1926
		Freight	Passenger	Total	Inc. misc.	Way and structures	Maintenance of equipment	Traffic	Transportation	General	Total			
St. Louis Southwestern of Mo.	6,771	3,959,563	1,009,955	4,969,518	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955
Seaboard Air Line	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Southern Ry.	6,771	3,959,563	1,009,955	4,969,518	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955	1,009,955
Alabama Great Southern	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Cinn., New Orleans & Tex. Pacific	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Georgia Southern & Florida	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
New Orleans & Northeastern	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Northern Alabama	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Southern Pacific	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Atlantic Steamship Lines	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
*Texas & New Orleans	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Spokane, Portland & Seattle	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Tennessee Central	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Terminal R. R. Ast't of St. L.	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Texas Mexican Ry.	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Toledo, Peoria & Western	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Trinity & Brazos Valley	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Ulster & Delaware	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Union Railroad of Penna.	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Union Pacific	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Oregon Short Line	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Oregon, Wash. R. R. & Nav. Co.	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Los Angeles & Salt Lake	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
St. Joseph & Grand Island	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Utah	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Virginian	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Wabash	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Ann Arbor	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Western Maryland	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Western Pacific	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765
Wheeling & Lake Erie	3,451,250	17,570,312	2,232,765	19,803,077	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765	2,232,765

*The Texas & New Orleans includes the M. L. & T. R. R. S. Co.,—Louisiana Western, Houston East & West Texas, Houston & Texas Central, Galveston, Harrisburg & S. Antonio.

News of the Week

(Continued from page 1467)

ments made at the recent newspaper publishers' convention in New York City to the effect that there should be closer co-operation between the two rate-fixing bodies in the matter of rates on pulp and newsprint.

Spring Meeting A. S. M. E.

Simultaneous sessions have been arranged for the spring meeting of the American Society of Mechanical Engineers, which will be held at the Greenbrier Hotel, White Sulphur Springs, W. Va., May 23-26. Following a council meeting, conference of local sections delegates and a business meeting May 23, the simultaneous sessions will begin at 2 p. m. and will be held each morning thereafter, varied entertainment being provided each afternoon and evening. The papers and speakers are as follows:

MONDAY, MAY 23

Education and Training for the Industries Session.—The General Motors Institute of Technology, Albert Sobey; Vocational Education in the Ford Industries, F. E. Searle; A Uniform Apprenticeship Certificate for Co-operating Groups of Employers, William S. Conant.

Central Station Power Session.—High Pressure Steam at Edgar Station, I. E. Moulthrop; High Steam Pressure and Temperature at Crawford Avenue Station, A. D. Bailey; Strength of Pipe Flanges, E. O. Walters and J. Hall Taylor.

TUESDAY, MAY 24

Fuels Session.—Economics of Coal Carbonization in the United States.

Management Session.—Relation of Safety to Production, L. W. Wallace.

Wood Industries Session.—Material Handling between the Stump and the Board, L. C. Bell; Design of Motor-Bus Bodies, L. C. Josephs, Jr.

WEDNESDAY, MAY 25

Hydraulic Session.—Rock Structure and Headgates of Cedar Creek Hydroelectric Station, W. S. Lee; Specific Characteristics for Hydraulic Turbines, Arnold Pfau; Comparison and Limitations of Various Water-Hammer Theories, R. S. Quick; Progress Report of Hydraulic Division.

Machine Shop Practice Session.—Elastic Hysteresis Relative to Operation of Mechanical Springs, J. K. Wood; Arc Welding, J. F. Lincoln.

Oil and Gas Power Session.—Study of Oil Sprays for Fuel-Injection Engines by Means of High-Speed Motion Pictures, E. G. Beardsley; Experimental Combustion Chambers Designed for High-Speed Diesel Engines, C. Kemper; Some Uses of the High-Speed Multi-Cylinder Indicator, H. M. Jacklin.

THURSDAY, MAY 26

Railroad Session.—High-Pressure Steam in Locomotive Cylinders, L. H. Fry; Diesel-Electric Traction, Wm. Arthur.

Industrial Power Session.—Management of Industrial Power, Engineer's Viewpoint, H. F. Scott; Management of Industrial Power, Manager's Viewpoint.

Materials Handling Session.—The Relation of Building Design to the Manufacturing Process, C. P. Wood; Actual Layout of a Building Around a Materials-Handling Installation.

Railway Coal Reserves on April 1

The railroads had on hand a reserve of 22,806,000 tons or 59 days' supply of fuel coal on April 1, when the partial suspension of operations in the bituminous coal mines began, according to a survey made by the Bureau of Mines of the Department of Commerce. This was the largest stock ever accumulated by the carriers, according to the bureau's statement, and exceeds by 3,000,000 tons the reserve built up before the strike of 1922.

According to figures compiled and furnished the bureau by the American Rail-

way Association the stocks of railroad fuel coal on other dates were as here shown:

January 1, 1919.....	13,626,000 tons
March 1, 1920.....	4,649,000 tons
April 1, 1922.....	19,844,000 tons
March 1, 1923.....	7,111,000 tons
March 1, 1925.....	11,337,000 tons
April 1, 1926.....	9,089,000 tons
January 1, 1927.....	13,499,000 tons
April 1, 1927.....	22,806,000 tons

In 1922 the railroad reserve stock of coal was estimated at 42 days' supply and in 1924 it was estimated at 50 days' supply. As of April 1, this year, according to the statement, the by-product coke plants had 38 days' supply, steel plants 73 days', other industrials 62 days', coal-gas plants 77 days', electric utilities 70 days', and bituminous coal dealers 24 days'.

Total consumers' stocks of bituminous coal on April 1 were estimated at 75,000,000 net tons, the largest stock in the history of the country, as compared with a previous maximum of 63,000,000 tons, which had been reached at the close of the war on November 11, 1918, and again on April 1, 1922, just before the great strike of that year. In addition, there were 2,085,000 tons on the upper lake docks, 431,000 tons in storage in the mines, 1,809,000 tons standing in cars unbilled, and an unknown quantity amounting to many millions of tons moving in cars en route to destination. The estimate is said to be subject to possible variation of 3 to 7 per cent, and at the rates of consumption the supply was enough for 53 days.

In the first three months of 1927, the average rate of consumption in the United States, exclusive of additions to stocks, was about 11,430,000 net tons a week, and exports averaged 387,000 tons a week, but it is stated that there is reason to believe that consumption since April 1 has been less than it was during the first quarter.

The O'Fallon Valuation Case

The I. C. C. has postponed from May 15 to July 15 the effective date of its order in the St. Louis & O'Fallon case.

The St. Louis & O'Fallon and the Manufacturers' railways have obtained outside legal assistance for their contest against the Interstate Commerce Commission's recapture order, which involves the principles to be used in valuing all the railways for rate-making purposes. Their bill filed in the district court at St. Louis

for an injunction against the commission's order is signed not only by Daniel H. Kirby, of Nagel & Kirby, general counsel for the two roads, but also by Frederick H. Wood, of Cravath, Henderson & De Gersdorff, Leslie Craven, counsel for the western group of the Presidents' Conference Committee on valuation, and Robert H. Kelley.

Although the commission found that the Manufacturers' Railway had no recapiturable net railway operating income, and its order runs only against the O'Fallon, the bill is in behalf of both companies because an important feature of the case made by the two roads before the commission and as set forth in the bill, is their contention that they are operated as a single system and thus entitled to combine their returns of net railway operating income. This question as to what constitutes a single system is also involved in other excess income cases pending before the commission.

In addition to the argument made against the legality of the commission's valuation methods the bill also makes the point that section 15a of the interstate commerce act is unconstitutional and invalid on the ground that it fails to provide any method or procedure sufficient to constitute due process of law for the determination of the value nor for the determination of net railway operating income upon the basis of which the amounts are to be determined; and that it is "an attempt by the Congress to delegate power to an administrative body or tribunal, without prescribing the rule, method, conditions or limitations in, by or upon which the powers so attempted to be delegated shall be exercised."

It is also contended that the recapture provisions of section 15a do not apply to income accrued prior to August 26, 1920, when the first rates prescribed by the commission under that section went into effect, and that the O'Fallon company should not be required to pay interest on the amount found by the commission to be due the government, for the period between the date of its order, February 15, and the date of payment, which the commission said should be within 90 days, on the ground that there had been no default, as the commission had made no previous demand. Another contention is that there should be no recapture for less than a full year.



S. P. "Sunset Limited" Crossing the Río Grande

Traffic

In the federal court at Pittsburgh, Pa., the Pennsylvania railroad has been fined \$500 for violation of the long and short haul provisions of the transportation act; 10 counts, \$50 each. The charges related to shipments of fire brick from New Salisbury and Ironton, O., to Creighton and Brackenridge, Pa., at rates higher than those charged to Butler, Pa.; also to a similar offense in connection with shipments from West Virginia.

The Canadian National has announced three new through trains for summer traffic. The "Maple Leaf" between Chicago and Montreal, beginning May 15, runs between these cities in about 22 hours. "The Confederation," beginning June 24, runs between Toronto, Ont., and Vancouver, B. C., making the run in either direction in 92 hours. "The Acadian," beginning June 26, runs between Montreal, Que., and Halifax, N. S., in 25 hours. The Acadian is made up wholly of sleeping cars.

The Boston & Maine has opened its new outbound freight house at Boston; a steel and concrete structure, 640 ft. long. With the opening of this freight house, platform tractors and trailers have been introduced to move merchandise from the receiving doors to outbound cars and the shipper now can deliver the whole of his load at one door. Heretofore, freight for different places had to be delivered at different doors; this practice requiring, in some cases, that a truck might have to back up at 14 different places. The new house is now used for shipments going to the Southern division; about May 23, the business of the Fitchburg-Berkshire division will be done here also, being transferred from Warren Bridge freight house.

B. & M. to Have "Get-Together" for Agents

A get-together meeting of all the Boston & Maine agents in New England who can be spared from the work of railroading for the day will be held in Boston on Sunday, May 22. They will be guests of President

George Hannauer. General agents, freight agents and ticket agents, all are being invited—and with them their wives.

The agents will inspect the Boston & Maine's unified Boston terminal improvements, and then will sit down to dinner with President Hannauer and other officers of the road to get better acquainted and to consider means of improving the railroad's service and contacts with the public. The meeting will mark the introduction of President Hannauer to many of the men.

Lehigh Valley Asks Passengers' Opinions of its Service

The Lehigh Valley, desirous of securing instructive suggestions for improving its passenger service, has issued an attractive little leaflet which it distributes in sleeping and parlor cars, coaches, dining cars and elsewhere. It reads as follows:

"The management of the Lehigh Valley Railroad is desirous that its service shall be maintained at the highest possible standard, also that its employees perform their duties with full regard to the comfort and convenience of the traveling and shipping public. It is possible that many constructive ideas looking to the further improvement of its service may be received if it is known they are welcome and will have careful consideration." Readers are asked to address the Bureau of Suggestions, New York.

Great Lakes Shippers' Board

The Great Lakes Shippers' Regional Advisory Board held its fourth annual meeting at Cleveland, O., on May 4, with an attendance of about 650. L. G. Macomber, who has been president for four terms, retired, and is succeeded by Kenneth A. Moore, of Detroit, heretofore vice-president. Prospects for freight traffic during the ensuing four months indicate a slightly better volume than was recorded during this same period of last year, according to the prognostications of the commodity committees. The meeting was addressed by M. J. Gormly and W. J. McGarry of the American Railway Association.

In the evening there was a joint banquet of the Shippers' regional board and the Cleveland traffic club, which was addressed by Senator Arthur Capper of Kansas.

The next meeting of the Board will be held at Detroit in September.

Foreign

American Locomotives Demonstrate Serviceability in South Africa

Operation and maintenance costs of American locomotives operated in the Union of South Africa compare favorably with other makes and savings affected by their use is expected to influence increased purchases, according to reports reaching the Department of Commerce.

Discussing the relative merits of the several makes of locomotives operated in the Union of South Africa, the Minister of Railways is quoted as saying in a recent session of Parliament that locomotives built in the United States had shown a large saving compared with other locomotives operated in South Africa.

India to Open Railway Training Schools

The Indian Railway Board, which has for several years past been considering proposals for the training of railway employees in transportation duties and other technical matters relating to railways, has now decided to start schools giving instruction, primary and advanced courses, according to a report from Vice-Consul Winfield H. Minor, Calcutta, made public by the Department of Commerce. Primary instructions are intended to provide training to probationers who have not commenced their railway service; advanced courses will provide instructions for probationary officers and "refresher" courses in the working of such mechanism as vacuum brake, electrical train lighting, the principles of the locomotives and theory and use of telegraph instrument.

Americans Tour South Africa

The second organized party of American tourists to South Africa numbered 398, of whom 292 were conveyed inland over the South African Railways on four special trains organized, managed and conducted by the administration. The party, on completion of the tour, expressed, through the American Express Company, its appreciation of the welcome extended and of its admiration for the service generally, and particularly dining car service. The party was brought to Africa on the motorship "Asturias," and visited the Kimberly mines, upland mountains and many of the native settlements.

Partly in order to cope with the increasing passenger traffic generally, and partly in connection with the anticipated heavy American tourist traffic early in 1928, the South African Railways Administration recently placed an order with the Metropolitan Carriage & Wagon Company, England, for 30 first-class main line "saloon" cars (i. e. parlor-sleeping cars). These cars will be generally the same as the standard main line saloon cars, except that each will be equipped with a bathroom.



International

Train of Governor Leland Stanford on the S. P. in 1869

Crossing Problem in South Africa

A commission has been appointed to investigate the highway grade crossing problems of the South African Railways. The commission consists of a chairman, appointed by the government, and two members representing the provincial authorities and the railway administration. It will report on the following:

(1) Distance at which unobstructed view should be obtained of level crossings from roadway and railway line, and to what extent existing obstructions should be removed and general improvements effected.

(2) Classification of crossings according to physical conditions, nature and extent of road and railway traffic; standardization of protective measures to be adopted; also nature and design of public warning signs to be introduced, and distance from the crossing at which these should be erected.

(3) Speeds at which road users should be allowed to approach and pass over railway intersections, and whether provision should be made, under certain conditions, for fast moving road vehicles coming to a stand prior to negotiating railway tracks.

(4) To what extent level crossings might be eliminated, also at what points bridges or subways should be substituted for grade crossings.

(5) Approximate expenditure incurred in giving effect to the commission's recommendations, and by whom, and in what proportion, such expenditure, including maintenance costs, should be met by local communities and state departments.

Bulgarian Railroad Problems

That through international bills of lading, were issued at Bulgarian railroad stations on shipments to Austria, Hungary, Czechoslovakia, Poland, Rumania, and Yugoslavia, beginning March 1, 1927, was announced by the National Chamber of Commerce of Bulgaria, according to Trade Commissioner William E. Nash, Constantinople, reporting in "Commerce Reports." He says in his report that it is expected that the re-establishment of these through bills for the first time since the war will prove of considerable use to commerce. Through international bills of lading remain to be established with Greece, Turkey, Germany and Italy. Heretofore it has been necessary for shippers to go through a tedious, expensive process of hiring one or more intermediaries at every frontier, to see to it that shipments crossed the border safely. Under the new arrangement, freight rates will be established on the basis of currencies in use in each of the countries traversed, but quoted if desired in the currency of the country of origin.

In addition, other railroad reforms figure prominently on the economic program of the Bulgarian government. The local question is not so much one of extending mileage, as in Turkey, but rather of improving the mileage already in operation.

The Bulgarian Government would like to make the improvement by increasing the trackage and rebuilding the stations, but that would entail more expense than the government has funds available to meet. Consequently, it is desired to obtain this cash abroad.

Equipment and Supplies

Locomotives

New York Central Places Equipment Orders

The New York Central Lines have bought 60 Hudson type heavy passenger locomotives from the American Locomotive Company. Inquiry for 66 locomotives was reported in the *Railway Age* of April 16. An experimental locomotive of this type was delivered some months ago, since which time it has been thoroughly tested in service with the aid of the dynamometer car. A description of these locomotives was published in the *Railway Age* of February 19, page 523. The experimental locomotive has so satisfactorily met the requirements, both in regard to power and to efficiency, that the New York Central has now purchased 59 additional locomotives of this type.

The locomotive and tender, in working order, weigh 610,000 lb. The tender carries 24 tons of coal and 12,500 gallons of water. Of these locomotives 50 will be assigned to the New York Central and ten to the Michigan Central.

The New York Central has also placed orders for 3,500 freight cars, 175 passenger train cars and 55 locomotive tenders as follows:

1,000	70-ton	Steel Hopper
1,000	70-ton	Steel Gondola
500	70-ton	Steel Gondola
1,000	55-ton	Steel Box
25	.....	All Steel Coaches
25	.....	All Steel Coaches
10	.....	All Steel Coaches
15	.....	All Steel Coaches
20	.....	All Steel Coaches
5	.....	All Steel Coaches
10	.....	Suburban Coaches
10	.....	Electric Zone Coaches
1	.....	Electric Zone Baggage
29	.....	Steel Baggage Cars
10	.....	Steel Baggage Cars
10	.....	Steel Baggage Cars
3	.....	Comb. Passenger & Bagg.
2	.....	Comb. Mail & Bagg.
55	15,000 gal.	Locomotive Tenders

THE LEHIGH & NEW ENGLAND is inquiring for six eight-wheel switching locomotives.

CHICAGO & ILLINOIS MIDLAND has ordered 2 American type locomotives from the Baldwin Locomotive Works.

THE YOUNGSTOWN & NORTHERN has ordered 2 six-wheel switching locomotives, from the American Locomotive Company.

THE CENTRAL OF NEW JERSEY has ordered 5 Pacific type locomotives and 10 eight-wheel switching locomotives from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of March 19.

Freight Cars

THE SPOKANE, PORTLAND & SEATTLE has ordered two 21 cu. yd. extension side dump cars, from the Clark Car Company.

THE SOUTH PORTO RICO SUGAR COMPANY has ordered 50 cane cars of 30 tons' capacity, from the Magor Car Corporation.

THE PACIFIC GAS & ELECTRIC COMPANY has ordered six 30 cu. yd. extension side dump cars, from the Clark Car Company.

THE FRUIT GROWERS EXPRESS has ordered 300 underframes from the Ryan Car Company. Inquiry for 651 underframes was reported in the *Railway Age* of April 30.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 100 underframes for ice cars from the Bettendorf Company. Inquiry for this equipment was reported in the *Railway Age* of April 30.

THE CHICAGO & ILLINOIS MIDLAND has given an order for making repairs to 240 gondola cars to the Ryan Car Company. Inquiry for prices on this work was reported in the *Railway Age*, April 2.

Passenger Cars

THE CENTRAL OF NEW JERSEY has ordered 25 coaches from the Bethlehem Steel Company. Inquiry for this equip-

Standard Steel Car Co.	N. Y. C.
Pressed Steel Car Co.	P. & L. E.
General American Car Co.	N. Y. C.
American Car & Fdy. Co.	C. C. C. & St. L.
Pullman Car & Mfg. Corp.	Mich. Cent.
Pullman Car & Mfg. Corp.	C. C. C. & St. L.
Pullman Car & Mfg. Corp.	N. Y. C.
Standard Steel Car Co.	N. Y. C.
Pressed Steel Car Co.	N. Y. C.
Pressed Steel Car Co.	P. & L. E.
Osgood Bradley Car Co.	B. & A.
Standard Steel Car Co.	N. Y. C.
Standard Steel Car Co.	N. Y. C.
American Car & Fdy. Co.	N. Y. C.
American Car & Fdy. Co.	Mich. Cent.
American Car & Fdy. Co.	B. & A.
Pressed Steel Car Co.	N. Y. C.
Standard Steel Car Co.	Mich. Cent.
American Locomotive Co.	N. Y. C.

ment was reported in the *Railway Age*, March 19.

THE CHICAGO & ILLINOIS MIDLAND has ordered six miscellaneous passenger cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age*, April 30.

THE ATCHISON, TOPEKA & SANTA FE has ordered three parlor cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of December 11.

Signaling

THE CHICAGO, INDIANAPOLIS & LOUISVILLE has ordered from the General Railway Signal Company, 50 locomotive equipments and 164 inductors, for use in the installation of the Miller inductive automatic train control system between Hammond, Ind., and Indianapolis, 163 miles.

Supply Trade

The Crosby Steam Gage & Valve Company has moved its Chicago offices to 547 West Randolph street.

The Regan Safety Devices Company has closed its Chicago office and is now handling business from New York.

G. E. Chase, broadcasting sales manager of the Graybar Electric Company, New York, has been appointed high tension sales manager.

The National Pneumatic Company, Inc., has removed its New York office from 50 Church street to the Graybar building, 420 Lexington avenue.

The Davis Brake Beam Company, Johnstown, Pa., has moved its Pittsburgh, Pa., office from 427 Oliver building to its own building at 418 Sixth avenue.

Arthur C. Langston has retired as an active representative of Jenkins Brothers, New York. Mr. Langston has been associated with Jenkins Brothers for about thirty years.

The General Pipe Cleaning Company, Inc., has removed its Philadelphia office from Twenty-third and Westmoreland streets to the Commercial Trust building, Fifteenth and Market streets.

A. G. Shaver, who has been consulting engineer for the Regan Safety Devices Company, has opened a consulting office at Chicago, and will handle matters relating to signaling and train control.

F. S. Jones, district sales agent of the Colorado Fuel & Iron Company, with headquarters at Oklahoma City, Okla., has been appointed assistant manager of sales of the steel division, with headquarters at Denver, Colo.

Bruce L. Compton has been appointed district sales representative of the Dressel Railway Lamp & Signal Company, Arlington, N. J., with headquarters at Philadelphia, Pa. Mr. Compton has been engaged in the sale of lighting equipment for more than twenty-five years.

The Wood Conversion Company, Cloquet, Minn., has moved its Chicago office to 360 North Michigan avenue. This company expects to complete the construction of a Balsam-Wool factory, 380 ft. by 70 ft., adjacent to the present plant at Cloquet, Minn., by March, 1928. It will consist of two stories and a basement and will produce 600,000 sq. ft. of Balsam-Wool in 20 hours.

S. T. Kiddoo, chairman of the board of the Stockyards National Bank and the Stockyards Trust & Savings Bank, Chicago, has resigned to become vice-president and treasurer of Fairbanks Morse & Company, effective May 16.

William C. Heath, manager of the manufacturing division of Fairbanks Morse & Company, has been elected vice-president in charge of manufacturing.

Harry L. Shepard, formerly associated with the department of the chemist and engineer of tests of the Union Pacific, has been appointed technical representative in the Chicago territory of the Reading Iron Company, Reading, Pa. The New York City office of the Reading Iron Company was removed on April 22, from 99 John street to 30 Church street; H. S. Carland is district sales representative at New York.

The Electric Controller & Manufacturing Company, Cleveland, Ohio, has appointed J. B. McCarthy and W. P. Robinson as representatives in Canada; their offices are at 307 Reford building, Toronto, and 808 Drummond building, Montreal, Quebec. The Electric Controller & Manufacturing Company also appointed the Petroleum Electric Company, 217 East Archer street, Tulsa, Okla., as representative in Oklahoma and the Panhandle district of Texas.

R. A. Davidson, western district sales manager of the Lincoln Electric Company, Cleveland, Ohio, with headquarters at Chicago, has resigned to become representative in the machinery department of Joseph T. Ryerson & Son, with headquarters at St. Louis, Mo. Royal D. Malm, who has had charge of sales in the automotive industries of the Lincoln Electric Company, with headquarters at Detroit, has been promoted to western district sales manager, with headquarters at Chicago, to succeed Mr. Davidson.

C. B. Woodworth has been appointed manager of the western division of the Vanadium Corporation of America, with headquarters in the Straus building, Chicago. Mr. Woodworth was graduated in mechanical engineering from Purdue University in 1907. From then until 1916 he served with the mechanical departments of the Wabash and the Baltimore & Ohio, passing through various grades from machinist to general foreman of the Mt. Clare shops of the Baltimore & Ohio. He then entered the employ of the American Arch Company, with whom he remained until 1918 when he was commissioned captain of engineers, U. S. Army. He served fifteen months with the A. E. F. on railroad work in France. Upon his return to this country he joined the foreign sales department of the American Locomotive Company, and spent six years in the Argentine and Brazil engaged in sales and service work. From 1926 until his present appointment he was with the Premier Staybolt Company as special technical representative.

J. de N. Macomb, who has been appointed assistant to the vice-president

in charge of railroad sales of the Inland Steel Company, Chicago, was born on January 24, 1877, at Branchport, N. Y., and was graduated from the University of Kansas in 1898. He entered railway service with the Atchison, Topeka & Santa Fe on August 1, 1899, since which time he has been in the employ of that company continuously. Until January, 1901, he was a rodman and instrumentman on surveys in eastern Oklahoma and southeastern Texas. From the latter date to March, 1907, he was resident engineer and bridge engineer on construction work in southeastern Texas, eastern Oklahoma and New Mexico. In June, 1907, he entered the office of the bridge engineer of the system at Chicago, where he remained until May, 1908, when he was made assistant engineer in the office of the chief engineer of the system at Chicago. From May,



J. de N. Macomb

1910 to June, 1911, he traveled in Europe and in July, 1910, he represented the Santa Fe at the International Railway Congress in Switzerland. From June, 1911, to May, 1912, he was assistant engineer in the office of the chief engineer of the system at Topeka, Kan., making rail investigations. On the latter date he was promoted to office engineer in charge of rail specifications, requirements and investigations, at Topeka, the office being moved to Chicago in 1913. During the war he was on active duty from September, 1917 to January, 1919, as captain and major of engineers. From February to July, 1918, he was in charge of track construction at Gièvres, France. In September he organized the 548th Engineers and during December was in command of a portion of the 20th Engineers. He was elected a director of the American Railway Engineering Association at its convention last March.

E. W. Davis, representative of the Westinghouse Air Brake Company, Boston, Mass., has been promoted to southwestern manager, with headquarters at St. Louis, Mo., and Raymond Boisselle, representative in the Pittsburgh district, has been transferred as representative to Boston, Mass., to succeed Mr. Davis. E. W. Davis was graduated from Purdue University with

the mechanical engineering class of 1902. He served for several years with the Atchison, Topeka & Santa Fe, the Chicago, Burlington & Quincy and a number of industrial organizations, including the Westinghouse Automatic Steam Coupler Company. He entered the employ of the Westinghouse Air Brake Company in 1908 as inspector, and later served as assistant district engineer at New York. In 1919 he was appointed representative of the Westinghouse Traction Brake Company at the same place, and since 1922 served as representative at Boston. Raymond Boisselle received his mechanical engineering education at the University of Illinois. He served on the Missouri Pacific, the Atchison, Topeka & Santa Fe and the Chicago, Rock Island & Pacific. Entering the service of the Westinghouse Air Brake Company in 1912, he was employed in the test department until 1917. During the World War he served as first lieutenant and captain, Aerial Armament Division, overseas, returning to the Westinghouse service as mechanical expert in the southwestern district where he remained until 1923, since which time he has been representative in the Pittsburgh district.

Locomotive Shipments in April

April shipments of railroad locomotives, from principal manufacturing plants, based on reports received by the Department of Commerce, totaled 98 locomotives, as compared with 137 in March and 151 in April, 1926. The following table gives the shipments and unfilled orders of locomotives for each month since January, 1926:

Year and month	Total	Shipments				Unfilled orders, end of month			
		Domestic		Foreign		Domestic		Foreign	
		Steam	Electric	Steam	Electric	Steam	Electric	Steam	Electric
1926									
January..	126	91	11	22	2	653	506	53	52
February..	163	101	22	38	2	572	442	60	30
March....	162	146	11	4	1	780	635	50	54
April.....	151	122	12	1	16	713	580	44	60
Total (4 mos.)	602	460	56	65	21	...	...	...	...
Total (year) 1926	1,755	1,332	177	167	59	...	...	...	...
1927									
January..	57	16	8	31	2	405	334	16	49
February..	80	69	10	...	1	396	314	22	51
March....	137	84	11	42	...	385	301	48	27
April.....	98	72	23	3	...	327	255	35	27
Total (4 mos.)	372	241	52	76	3	...	...	...	...

Obituary

William Kesley Schoepf, president and chairman of the board of the Cincinnati Car Company, Cincinnati, Ohio, died on May 6 following a heart attack. He was born on May 20, 1864, at Ft. Delaware, Del. Until 1893 he was principal assistant engineer of the District of Columbia and engaged in the construction of the underground trolley system at Washington, and was vice-president and general manager of the Belt Railway and the Eckington & Soldiers Home Railway Company. In this year he became general manager of the Consolidated Traction Company of Pittsburgh,

which position he held until 1899 when he became chairman of the executive committee of the Cincinnati Traction Company. In 1902 he was elected president of this company and in 1905 organized and was president of the Ohio Traction Company. In 1907 he organized the Ohio Electric Railway Company and was also vice-president of the Indiana Union Traction Company and a director of the Terre Haute, Indianapolis & Eastern Traction Company and the Indianapolis Traction & Terminal Company. In 1913 he was elected president of the Cincinnati Car Company, which position he has held until his death.

Edward Everett Ayer, director of the Ayer & Lord Tie Company, Chicago, who died on May 3, was born on November 16, 1841, at Kenosha, Wis. At the age of 19, Mr. Ayer crossed overland to the Pacific Coast and was the first man from California sworn into service in the Civil War. During the Civil War he served in the army in California, Arizona and New Mexico, and later engaged in the merchandising business at Harvard, Ill. About 1867 he began the operation of a sawmill at Flagstaff, Ariz., and some ten years later he established the Ohio Valley Tie & Lumber Company at Chicago, supplying a number of western railroads with cedar ties, posts and telegraph poles. In 1893, in conjunction with John B. Lord, he organized the Ayer & Lord Tie Company of which he served as a director until the time of his death. Mr. Ayer retired from active participation in business in 1914 to travel in this country and abroad. Since 1919 Mr.

Ayer has spent the greater part of his time in California.

Trade Publications

CARBONIZATION OF COAL.—The KSG process for the low temperature carbonization of coal is described in Publication IC-3 issued by the International Combustion Engineering Corporation, 200 Madison avenue, New York. This process was developed in Europe, and a unit having a capacity of 80 to 100 tons a day has been in satisfactory commercial operation at Essen, Germany, for about two years. A 500-ton capacity plant is now in the course of installation at South Wales.

Construction

ATCHISON, TOPEKA & SANTA FE.—Plans have been prepared for the construction of a 600,000-gal. reservoir with concrete dam and spillway, three and one-half miles north of Galesburg, Ill. At the same time this company will construct at Galesburg, a four-track concrete coaling station and will make minor track improvements.

BALTIMORE & OHIO.—This road has let a contract to the Empire Construction Company of Baltimore, Md., for grading, masonry, and for additional freight facilities at Martinsburg, W. Va., at an estimated cost of \$29,000. Another contract has been awarded to the J. S. McCormick Company of Easton, Pa., for the reconstruction of two bridges at Elmwood Place and Glendon, O., at a cost of \$23,000. Also, a contract has been awarded to the Seaboard Construction Company of Philadelphia, Pa., for the erection of two bridges on the Metropolitan branch at a cost of \$22,000.

CHICAGO, MILWAUKEE & ST. PAUL.—The Federal court at Chicago has authorized the construction of a cold storage and ice house at Hollandale, Minn. The expense of this structure which, it is estimated, will cost \$80,000, will be shared equally by this company, the Chicago, Rock Island & Pacific and the Albert Lea Farms Company. The court has also approved the expenditure of \$30,000 for enlargement of the concrete products plant at Tomah, Wis., and the construction of a track connection with the Chicago, Aurora & Elgin at Elgin, Ill., to cost \$33,000. Authorization has been made for the purchase of 14 acres of land for the future enlargement of the Blue Island yard which will be undertaken in conjunction with the Indiana Harbor Belt.

DULUTH, MISSABE & NORTHERN.—A contract for the construction of a two-story dispensary and hospital at Duluth, Minn., has been awarded to Nauffts and Bergstrom, Duluth, at a total estimated cost of \$40,000.

FAIRPORT, PAINESVILLE & EASTERN.—This road has been authorized to construct an extension of its line in Lake county, Ohio, from a point near Painesville, eastward to a point near Madison, a distance of about 6 miles, with a spur extending from a point near the eastern terminus of the proposed extension southeastward to a point near the north bank of the Grand river, a distance of approximately 2 miles. The cost of constructing the main extension is estimated at \$572,688 and that of the spur at \$139,505, a total of \$712,193.

MISSOURI PACIFIC.—A contract has been let to Fairbanks, Morse & Co., Chicago, for the construction of a 450-ton reinforced concrete electric conveyor-type coaling station to serve three tracks at Osawatimie, Kan. This coaling station will be so constructed as to permit the building of an additional 100-ton bin to serve two more tracks at some future date.

NEW ORLEANS GREAT NORTHERN.—This company has awarded a contract for the construction of a two-story brick passenger station and a one-story brick freight station at Jackson, Miss., to W. J. McGee & Son, Jackson, at a cost of about \$60,000.

NEW YORK CENTRAL.—This road has awarded the following contracts: For filling for temporary tracks north of Dyckman street, in connection with elimination of grade crossings in New York, to the Lyons-Slatery Company, Inc., of New York; for alterations to the present structure and the construction of overhead roadways along the easterly side of the Grand Central Terminal building and over the Forty-fifth street viaduct, in New York, to James Stewart & Co., Inc.; for grading to sub-grade in the area of the new track layout in Buffalo, N. Y., to the John Johnston Construction Company; for filling for the main line tracks for the south approach to the Dyckman street bridge, in New York, to the Lyons-Slatery Company, Inc.; for construction of the duct line and splicing chambers north and south of Dyckman street at New York to the same firm. To the George W. Rogers Construction Company of New York was given a contract for the repairing of the "A" frame at the West Forty-second street ferry slip, at New York, and to the Walsh Construction Company of Davenport, Iowa, was given a contract for the grading of a site for an engine house at Harmon, N. Y.

OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY.—This company has prepared plans for the construction of additional trackage and improvement to the freight yard at Olympia, Wash., involving an estimated expenditure of \$30,000.

OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY.—Plans have been announced by this company for the construction of a 200,000 bu. grain elevator on the east bank of the Willamette river at Portland, Ore. The entire project, which includes a 200-ft. dock, will involve an expenditure of about \$180,000.

PORT ANGELES WESTERN.—A certificate has been issued authorizing the Port Angeles Western to construct part of a proposed extension of its line of railroad in Clallam and Jefferson counties, Washington, from Tyree to Forko, at a cost of approximately \$1,266,450.

SOUTHERN.—A contract for the construction of a three-track reinforced concrete coaling station of 500-ton capacity at Anniston, Ala., has been let to Fairbanks, Morse & Co., Chicago. Storage for 100 tons of wet sand and 20 tons of dry sand will be included. This contract is in addition to nine other stations, order for which was reported in the *Railway Age* of April 30.

THE VERMONT "Goodwill train" in which the governor of the state and about 150 prominent citizens have traversed a number of western states and Canada, advertising the products and virtues of the Green Mountain state, completed its circuit at Burlington on April 28, having traveled 3,632 miles and having visited 22 cities in ten states.

Railway Finance

BALTIMORE & OHIO.—Control of C. I. & W. by Operating Agreement Approved.

—The Interstate Commerce Commission which authorized the Baltimore & Ohio to acquire control of the Cincinnati, Indianapolis & Western by purchase of its capital stock last April, has approved additional control of the C. I. & W. by an operating agreement. The terms of the agreement are stated in the decision as follows:

Under the terms of the proposed agreement the applicant will receive all revenues and receipts of every character from the operation of the property; will pay all costs and expenses and assume all liability incurred in such operation, defend all actions and suits which may be brought against the C. I. & W., and pay all charges for trackage, terminals, hire of equipment, and other rentals; will maintain the property in good condition, make necessary renewals, and will pay for such maintenance and renewals as may be chargeable to operating expenses; will properly maintain all equipment, will assume unfulfilled contracts; will pay the cost of maintaining the corporate organization of the C. I. & W., also all taxes and assessments, interest on bonds, equipment obligations, and other interest-bearing obligations outstanding except such obligations held by the applicant, and \$1.50 per share on preferred stock and \$.85 per share on common stock held by others than the applicant. The applicant will not be required to keep separate accounts of earnings and expenses except as required by law. It will advance to the C. I. & W. funds necessary for capital purposes and to meet maturing obligations, and will receive in respect of such advances mortgage bonds or other acceptable obligations at their then market value. The agreement will continue in force until terminated by 60 days' notice in writing given by either party.

Advantages of the operating agreement are outlined by the commission as including the following:

The applicant alleges that the operation by it of the C. I. & W. will result in substantial economies and will benefit both the carriers and the public. A considerable portion of the C. I. & W. is laid with 56 and 60 lb. rail, and this is gradually being replaced with 90 and 100 lb. rail. Office and mechanical forces have been and will be consolidated at various points, and off-line soliciting offices of the C. I. & W. will be abandoned. The present complicated system of accounting will be eliminated, and all accounts will be kept by the applicant. Adequate and high-grade equipment will be available for passengers and freight on the C. I. & W., through service for both classes of traffic will be improved, and the operating and physical conditions of the C. I. & W. will be raised to a standard which probably could not be attained by that road under separate operation.

The Baltimore & Ohio, in pursuance to the authorization to that effect purchased 51,189 shares or 95.68 per cent of the preferred stock of the Cincinnati, Indianapolis & Western and 51,570 or 96.39 per cent of the common stock, a total of 102,759 or 96.04 per cent of the entire capital stock and is continuing to purchase the remaining outstanding stock when and as offered. The prices paid were \$24.50 per share for the preferred and \$14.50 per share for the common and the Baltimore & Ohio stated that its offer to purchase the remaining outstanding stock at these prices will remain open indefinitely. The payments of \$1.50 per share on the preferred stock and \$.85 per share on the common stock held by others than the Baltimore & Ohio represent approximately 6 per cent upon the market value of the stock as evidenced by the prices paid for the acquisitions by the Baltimore & Ohio for its present holdings.

CHESAPEAKE CORPORATION.—Organization and Sale of Bonds.—Organization of a new corporation which will be owned by the common stockholders of the New York, Chicago & St. Louis Railroad and which will acquire 600,000 shares of Chesapeake & Ohio common stock, a majority of which has been hitherto held in the interest of the Van Sweringens, is announced in the form of advertisements of the sale of \$48,000,000 20-year 5 per cent convertible collateral trust bonds of the new company. The bonds have been sold by J. P. Morgan & Co., the First National Bank of New York, the Guaranty Company of New York, the National City Company and Lee, Higginson & Co. at 95 and accrued interest to yield nearly 5.50 per cent at maturity. The bonds will be dated May 15, 1927, and will be due May 15, 1947, and are redeemable by operation of a sinking fund and also (in amounts of not less than \$2,500,000) at the option of the Corporation upon 60 days' notice, on any interest date at 100 and accrued interest. Details of the new issue are summarized by O. P. Van Sweringen, president of the Corporation, as follows:

The Chesapeake Corporation is acquiring 600,000 shares of The Chesapeake & Ohio Railway Company common stock, a majority of which 600,000 shares has been heretofore held by a subsidiary of The New York, Chicago & St. Louis Railroad Company. In connection therewith, The Chesapeake Corporation is issuing the bonds herein described (which will also provide working capital) and its entire capital of 900,000 shares (without par value) of common stock, of which a majority is to be distributed to the common stockholders of The New York, Chicago & St. Louis Railroad Company.

The bonds are to be secured under a collateral trust indenture dated May 15, 1927, by the pledge thereunder of the above-mentioned 600,000 shares of Chesapeake & Ohio common stock, being one share of such stock for each \$80 principal amount of the bonds. The indenture will contain provisions protective of the collateral security in the event of subsequent distributions of cash, stock, property or rights upon the pledged stock, other than distributions out of earnings realized after Jan. 1, 1927, and other than subscription rights in respect of the issue of 595,024 additional shares of Chesapeake & Ohio common stock. The Corporation may use free of the lien of the indenture its share of such additional stock, when and as authorized. An application for authority to issue such additional shares at par for cash to Chesapeake & Ohio common stockholders at the rate of one share for each two shares held, is now pending. Based on current market quotations, the present value of the pledged stock, after deducting the estimated value of the right to subscribe for its ratable proportion of such additional shares at par, is approximately \$1.875 for each \$1,000 principal amount of bonds.

Annual interest charges on this issue of bonds will represent the equivalent of \$4 on each share of Chesapeake & Ohio stock pledged. The Chesapeake & Ohio is paying current dividends on its present common stock at the rate of \$8 per share per annum.

Unless earlier redeemed, the bonds may be converted, at the option of the holders, after May 15, 1932, and until subsequent redemption or maturity, into the pledged stock. Until additional common stock shall be issued by the Chesapeake & Ohio (other than in exchange for its convertible preferred stock) the bonds may be converted at par into the pledged stock at \$220 per share. If the Chesapeake & Ohio shall issue at par the 595,024 shares of additional common stock referred to above, thereupon the conversion price of the pledged stock will become \$180 per share. The indenture will contain provisions protective of the conversion privilege in the event of subsequent issues of Chesapeake & Ohio common stock for cash or property or as dividends, and in the event of dividends paid by the Chesapeake & Ohio out of surplus existing January 1, 1927.

Holders of bonds called for redemption after

(Continued on page 1484)

Annual Report

Thirtieth Annual Report of the Northern Pacific Railway Company

For the Year Ending December 31, 1926.

Office of the

NORTHERN PACIFIC RAILWAY COMPANY,

St. Paul, Minnesota, April 15, 1927.

To the Stockholders of the
Northern Pacific Railway Company:

The following, being the thirtieth annual report, shows the result of the operation of your property for the year ending December 31, 1926.

Income Account

	1926	1925	Increase— Decrease—	I D
Average mileage operated	6,682.35	6,693.63	D	11.28
OPERATING INCOME				
Operating revenues	\$97,351,041.96	\$97,864,554.73	D	\$513,512.77
Operating expenses	68,260,944.43	69,972,476.31	D	1,711,531.88
Net operating revenue	\$29,090,097.53	\$27,892,078.42	I	\$1,198,019.11
Railway tax accruals	9,151,146.99	9,346,895.84	D	195,748.85
Uncollectible railway revenues	20,672.13	25,374.45	D	4,702.32
Railway operating income	\$19,918,278.41	\$18,519,808.13	I	\$1,398,470.28
Equipment rents—net	2,300,954.46	1,855,789.59	I	445,164.87
Joint facility rent—net	1,994,467.62	1,851,721.62	I	142,746.00
Net railway operating income	\$24,213,700.49	\$22,227,319.34	I	\$1,986,381.15
NONOPERATING INCOME				
Income from lease of road	\$332,531.21	\$339,066.06	D	\$6,534.85
Miscellaneous rent income	540,694.63	698,306.29	D	157,611.66
Miscellaneous nonoperating physical property	174,799.49	60,172.65	I	114,626.84
Dividend income	9,334,739.18	9,328,273.00	I	6,466.18
Income from funded securities	1,287,673.55	406,547.80	I	881,125.75
Income from unfunded securities and accounts	415,770.79	243,427.95	I	172,342.84
Miscellaneous income	7,366.92	3,370.55	I	3,996.37
Total nonoperating income	\$12,093,575.77	\$11,079,164.30	I	\$1,014,411.47
Gross income	\$36,307,276.26	\$33,306,483.64	I	\$3,000,792.62
DEDUCTIONS FROM GROSS INCOME				
Rent for leased roads	\$51,320.65	\$51,320.66	D	.01
Miscellaneous rents	49,530.20	13,861.72	I	35,668.48
Miscellaneous tax accruals	36,000.00	36,000.00	I	36,000.00
Interest on funded debt	14,774,879.07	14,783,165.43	D	8,286.36
Interest on unfunded debt	129,427.24	242,163.95	D	112,736.71
Amortization of discount on funded debt	37,218.28	40,104.69	D	2,886.41
Miscellaneous income charges	226,168.76	231,579.60	D	5,410.84
Total deductions from gross income	\$15,304,544.20	\$15,362,196.05	D	\$57,651.85
Net income	\$21,002,732.06	\$17,944,287.59	I	\$3,058,444.47
Dividend requirements	12,400,000.00	12,400,000.00	I	—
Balance for the year	\$8,602,732.06	\$5,544,287.59	I	\$3,058,444.47

Earnings

Freight Business

Freight revenue was \$76,226,064.74, a decrease of \$75,242.95, or .10 per cent.

The number of tons of revenue freight carried was 22,984,526, an increase of 576,800, or 2.57 per cent.

6,639,159.517 tons of revenue freight were moved one mile, a decrease of 111,982.939 tons one mile, or 1.66 per cent.

The average revenue per ton mile increased from 1.130 to 1.148 cents.

The revenue train load decreased from 668.57 to 661.87 tons. The total train load, including company freight, decreased from 762.78 to 759.00 tons.

The number of miles run by revenue freight trains, including proportion of mixed, was 10,030,872, a decrease of 66,959, or .66 per cent.

Passenger Business

Passenger revenue was \$12,639,989.68, a decrease of \$561,189.40, or 4.25 per cent.

Mail revenue was \$1,722,947.98, a decrease of \$65,574.17, or 3.67 per cent.

Express revenue was \$1,825,546.69, an increase of \$135,530.71, or 8.02 per cent.

Sleeping car, parlor and chair car, excess baggage and miscellaneous passenger revenue was \$1,189,113.94, an increase of \$49,194.66, or 4.32 per cent.

Total revenue from persons and property carried on passenger and special trains was \$17,377,598.29, a decrease of \$442,038.20, or 2.48 per cent.

The number of passengers carried was 2,806,861, a decrease of 344,906, or 10.94 per cent. The number of passengers carried one mile was 406,628,388, a decrease of 19,886,467, or 4.66 per cent.

The number of miles run by revenue passenger trains, including proportion of mixed, was 9,611,547, a decrease of 5,200, or .05 per cent.

The average revenue per passenger mile increased from 3.095 to 3.108 cents.

Transportation—Rail Line

The charges for transportation expenses were \$32,291,964.81, a decrease of \$1,246,268.69, or 3.72 per cent, as against a decrease in total operating revenue of 0.52 per cent.

Maintenance of Equipment

The charges for maintenance of equipment were \$17,414,638.18, a decrease of \$190,666.11, or 1.08 per cent. Of the total charges \$4,067,483.20 represents depreciation, accrued at the rate of 4 per cent.

Locomotives

Total number of locomotives on active list, December 31, 1925	1,305
Deductions:	
Locomotives sold	5
Locomotives withdrawn from service, to be sold or dismantled	51
Total locomotives on active list, December 31, 1926	1,249
In addition to locomotives on active list there were:	
Withdrawn from service and on hand December 31, 1925	7
Withdrawn from service during the year	51
Less—Dismantled	42
Leaving on hand locomotives withdrawn from service which may be sold or dismantled	16

Hauling Capacity.

	Number	Tractive power (Pounds)	Total weight on drivers (Pounds)	Total weight of locomotives (Pounds)
Assignment December 31, 1925	1,305	51,213,180	229,127,578	293,488,638
Added during year	—	9,400	45,900	49,400
Total	1,305	51,222,580	229,173,478	293,538,038
Locomotives sold or withdrawn from service	56	1,501,500	6,891,874	8,707,324
Total December 31, 1926	1,249	49,721,080	222,281,604	284,830,714

* Changes in weights and tractive power are due to locomotives being simplified, locomotives having superheaters applied, changes in steam pressure and in size of cylinders.

EARNINGS AND EXPENSES PER MILE OPERATED

	1917	1922	1923	1924	1925	1926
Operating revenues per mile	\$13,526.37	\$14,467.89	\$15,294.98	\$14,265.46	\$14,620.55	\$14,568.38
Operating expenses per mile	8,171.39	10,940.92	12,050.52	10,558.94	10,453.59	10,215.11
Net operating revenue per mile	\$5,354.98	\$3,526.97	\$3,244.46	\$3,706.52	\$4,166.96	\$4,353.27
Taxes per mile	1,059.52	1,269.54	1,268.99	1,279.47	1,396.39	1,369.45
Net after taxes	\$4,295.46	\$2,257.43	\$1,975.47	\$2,427.05	\$2,770.57	\$2,983.82
RATIOS						
Operating expenses to operating revenues	60.41%	75.62%	78.79%	74.02%	71.50%	70.12%
Transportation expenses to operating revenues	32.34%	38.30%	37.78%	35.88%	34.27%	33.17%
Taxes to operating revenues	7.83%	8.77%	8.30%	8.97%	9.55%	9.40%

[ADVERTISEMENT]

Condition	December 31, 1926		December 31, 1925	
	Number	Per cent	Number	Per cent
Good	1,044	83.59	1,100	84.29
Fair	73	5.84	57	4.37
At shops or awaiting shop	111	8.89	119	9.12
Unserviceable, awaiting disposition	21	1.68	29	2.22
	1,249	100.00	1,305	100.00
Number of oil burning locomotives	19	1.52	20	1.53
Number of locomotives equipped with super-heaters	781	62.53	770	59.00
Number of locomotives equipped with stokers	267	21.38	242	18.54
Number of locomotives equipped with boosters	23	1.84	6	.46

The purchase of 12 Northern Pacific type passenger locomotives was authorized and order placed in 1926; delivery was completed during February, 1927.

Freight car situation on December 31st.

	1926	1925	Increase— Decrease—D
N. P. cars on line	37,994	35,970	I 2,024
Foreign cars on line	8,177	8,142	I 35
Total cars on line	46,171	44,112	I 2,059
N. P. cars on foreign lines	11,631	13,181	D 1,550
Number of cars unserviceable	2,963	2,348	I 615
Percentage of unserviceable to total cars on line	6.42	5.32	I 1.10
Number of cars requiring heavy repairs	1,444	1,560	D 1.16
Percentage of above to total cars on line	3.13	3.54	D .41
Number of cars requiring light repairs	1,519	788	I 731
Percentage of above to total cars on line	3.29	1.79	I 1.50

Maintenance of Way and Structures

The charges for maintenance of way and structures were \$12,297,402.93, a decrease of \$461,786.72, or 3.62 per cent.

The following statements give particulars of some of the work done.

Permanent Way.

	Year 1926	Year 1925
New second track laid with 90 pound rail .....	.05	.05
New branch lines laid with 90 pound rail, second hand		15.24
Main line relaid with 130 pound rail	9.96	11.79
Main line relaid with 100 pound rail	205.85	187.07
Main line relaid with 90 pound rail	1.65	9.37
Second track relaid with 130 pound rail .....	.53	.30
Second track relaid with 100 pound rail	24.76	9.84
Second track relaid with 90 pound rail	1.34	.63
Branch lines relaid with 100 pound rail, second hand	1.20	.....
Branch lines relaid with 90 pound rail, second hand	8.21	83.20
Branch lines relaid with 85 pound rail, second hand	1.61	10.82
Sidings and spurs constructed	32.00	24.30
Track ballasted with washed gravel	173.16	153.56
Track ballasted with washed gravel	507,903	398,080
Track ballasted with bank-run gravel	81.42	23.43
Track ballasted with bank-run gravel	134,693	56,123
Track ballasted with bank-run gravel (patch or repairs)	45,585	64,678
Embankments widened	299.18	138.46
Embankments widened	443,899	200,170
Cross, bridge and switch tie renewals, main line	1,016,565	1,207,593
Cross, bridge and switch tie renewals, branch lines	601,891	674,593
Timber bridges replaced by permanent structures and embankments	57	46
Equal to	2.97	.90
Timber bridges renewed	45	52
Timber culverts renewed	15	51
Timber culverts replaced in permanent form	113	102
New stock fences constructed	59.81	98.68
New snow fences constructed .....	.....	.80

Bridges.

103 bridges were replaced, of which 45 bridges, 7,448 linear feet in length, were replaced by timber structures and one permanent and 57 timber structures were replaced in permanent form, as follows:

Replaced by embankment 42 bridges, 14,237 linear feet.
Replaced by steel truss, girder,
I-beam and reinforced concrete
trestle 16 bridges, 1,515 linear feet.

Total 58 bridges, 15,752 linear feet.

In addition to changes referred to above, one temporary bridge was abandoned, 7 permanent and 8 temporary bridges were added and 128 culverts were rebuilt, 15 in temporary and 113 in permanent form; 13 I-beam spans, a total of 1,030 linear feet, were strengthened for standard loading.

Bridges as they existed December 31, 1926.

Description	Number	Linear feet	Miles
Steel, iron, stone and concrete permanent bridges ..	858	150,759	28.55
Timber and combination iron and timber structures ..	2,410	351,630	66.60
Total	3,268	502,389	95.15

(ADVERTISEMENT)

Total length of timber structures replaced by steel bridges, embankments or other permanent form from July 1, 1885, when work was commenced, to December 31, 1926, 150.19 miles.

Fuel Stations.

Improvements were made in the coaling station at Dilworth, Minnesota, and the one at Tacoma, Washington, was replaced with a modern type station.

Block Signals and Interlockers.

Automatic train stop system between Dickinson, North Dakota, and Glendive, Montana, was completed and put in operation in August, and has been accepted by the Interstate Commerce Commission, thereby completing the automatic train stop installation requirements.

Miscellaneous.

New turnstables have been installed, and engine houses have been extended at Jamestown, North Dakota, Glendive and Missoula, Montana, for handling new and larger passenger power.

The freight terminals at Spokane, Washington, are being reconstructed.

Work on the Orofino Branch in Idaho has been in progress, and at the close of 1926, 92% of the total estimated grading had been completed, and 13.3 miles of track laid. Many difficulties have developed during the progress of the work, but it is expected to have the track in shape for hauling logs from the Mile Post 30 early in June and to complete the line before the end of 1927.

The work of rehabilitation of the line from Arrow to Orofino, for the use of heavier power necessary in the operation of the log movement from the Orofino Branch to Lewiston, will be completed about June 1, 1927. This work consists of replacing present rail with 90-lb. second class rail, placing ballast, strengthening bridges, changing facilities, and other contingent work.

The additional trackage required for handling the logs from the Orofino Branch, at the Clearwater River near Lewiston, Idaho, will be completed about June 1, 1927.

General

Financial Results of Operation.

The operation of your property, after all charges, resulted in a net income of \$21,002,732.06, an increase of \$3,058,444.47. Freight revenue decreased \$75,242.95, or .10%, while tons carried one mile decreased 111,982,939, or 1.66%. The average distance hauled decreased from 301.29 miles to 288.85 miles, or 4.13%, but the average revenue per ton mile increased from 1.130 cents to 1.148 cents. Passenger revenue decreased \$561,189.40, or 4.25%, and passengers carried decreased 344,906, or 10.94%. There was a slight increase in the average rate per passenger mile and an increase in the average miles traveled by each passenger from 135.33 to 144.87, or 7.05%. Other passenger train revenue showed an increase of \$119,151.20, or 2.58%.

The operating revenues of the company decreased \$513,512.77, or .52% compared with 1925, while operating expenses decreased \$1,711,531.88, or 2.45%. The net revenue increased \$1,198,019.11, or 4.29%. Transportation expenses decreased \$1,246,268.69, or 3.72%, while the train miles decreased .39%.

Return on Property.

Year ending December 31,	Railway Property Investment including Material and Supplies and Working Cash at end of Year	Net Railway Operating Income	Return on Investment Per cent
1916	\$521,303,308	\$33,446,012	6.416
1917	526,294,063	30,491,140	5.794
1918	533,605,992	24,217,342	4.538
1919	534,450,449	14,368,479	2.688
1920	549,775,317	7,949,458	1.446
1921	561,436,950	10,843,826	1.931
1922	560,271,172	19,450,515	3.472
1923	583,882,752	17,100,557	2.929
1924	588,886,578	19,861,077	3.373
1925	598,746,382	22,227,319	3.712
1926	610,912,382	24,213,700	3.964

Since December 31, 1915, \$98,645,137 has been expended on additions and betterments to the property. In the same period, not counting the increase in debt due to the refunding of the Northern Pacific-Great Northern (C. B. & Q. Collateral) Joint 4's in 1921, the total debt outstanding in the hands of the public decreased \$4,751,900.

The application for increase in freight rates, made in April, 1925, to the Interstate Commerce Commission by carriers in the Western District, was denied in July, 1926. The Commission stated that "in the northwestern region and in western trunk-line territory, the revenues of certain of the important carriers have not yielded 5.75 per cent upon any rate bases that can reasonably be adopted in advance of a final determination of

Lines Abandoned.

Authority was obtained from the Interstate Commerce Commission to abandon the balance of the Washburn Branch from Iron River to Coda, Wisconsin, 9.8 miles, and part of the Ocosta Branch from near Johns River bridge to Bay City, Washington, 4.78 miles.

Erroneous Inclusion of Northern Pacific Lands Within the Boundaries of National Forests.

Previous reports have referred to the investigation of the Northern Pacific land grant, begun by a joint congressional committee in the early part of 1925. Hearings were held in April, May and June, 1926, and briefs were submitted on January 15, 1927. The committee recommended to Congress that the investigation be continued and that the Attorney General of the United States be asked to advise Congress what legal action, if any, should be taken in the matter of adjusting the grant. Congress adopted a resolution just before adjournment embodying the recommendations of the committee, continuing the committee and prohibiting the issuance of patents until June 1, 1928.

Financial Condition.

During the past year outstanding securities amounting to \$1,337,000 have been retired, reducing the funded debt from \$320,818,000 to \$319,481,000. The net expenditures for additions and betterments amounted to \$8,972,349.

Pension Department.

The Company's pension plan has been in operation since May 1, 1922. On December 31, 1926, there were on the retired list 535 employees, whose average monthly allowance was \$48.67. During the year 122 employees were added to the list and 46 died. The total amount disbursed during the year was \$297,825.54.

Unification of Northern Pacific Railway Company and Great Northern Railway Company.

On February 1, 1927, there was sent to you a letter explaining the plan proposed for the unification of the Northern Pacific Railway Company and the Great Northern Railway Company.

On February 15, 1927, there was sent to you the Plan and Deposit Agreement, with a form of proxy.

To receive the stock and proxies, under the Deposit Agreement, and to do all things necessary with the Interstate Commerce Commission and others representing the public to make the plan effective, the following Committee was created by authority of the Board of Directors of the Northern Pacific Railway Company and Great Northern Railway Company: George F. Baker, Arthur Curtiss James, J. P. Morgan, Louis W. Hill, Howard Elliott.

By order of the Board of Directors,

HOWARD ELLIOTT,

Chairman.

CHARLES DONNELLY,

President.

General Balance Sheet, December 31, 1926

ASSETS			LIABILITIES			Increase or Decrease
INVESTMENTS	1926	1925	1926	1925		
ROAD AND EQUIPMENT						
Road	\$463,592,885.96	\$457,475,852.48	STOCK			
Equipment	117,171,043.66	114,474,266.58	Capital Stock-Common	\$248,000,000.00	\$248,000,000.00	
General	3,607,554.94	3,449,016.05	GOVERNMENTAL			
	\$584,371,484.56	\$575,399,135.11	GRANTS			
DEPOSITS IN LIEU OF MORTGAGED PROPERTY (Net moneys in hands of Trustees from sale of land grant land, etc.).	\$704,134.41	\$364,334.44	Grants in aid of construction	\$489,150.45	\$525,467.79	
MISCELLANEOUS PHYSICAL PROPERTY	\$10,086,455.69	\$10,095,612.06	LONG TERM DEBT			
INVESTMENTS IN AFFILIATED COMPANIES			Funded debt	\$336,651,500.00	\$337,984,500.00	
Stocks	\$144,085,285.01	\$144,085,285.01	Less—held by or for the Company	17,170,500.00	17,166,500.00	
Bonds	30,202,647.75	30,202,647.75		\$319,481,000.00	\$320,818,000.00	
Notes	2,362,788.92	2,262,788.92	Total Capital Liabilities	\$567,970,150.45	\$569,343,467.79	
Advances	3,869,814.74	3,895,220.58	CURRENT LIABILITIES			
	\$180,520,536.42	\$180,445,942.26	Traffic and car service balances payable	\$798,078.15	\$843,628.75	
OTHER INVESTMENTS			Audited vouchers and wages payable	6,048,083.55	5,918,132.89	
Stocks	\$201.00	\$1.00	Miscellaneous accounts payable	667,801.18	1,052,889.53	
Bonds	2,037,554.10	1,829,663.74	Interest matured unpaid	5,338,244.50	5,370,975.75	
U. S. Treasury notes ..		1,269,531.25	Unmatured dividends declared	3,100,000.00	3,100,000.00	
Advances		750.00	Unmatured interest accrued	405,214.57	419,843.54	
Contracts for sale of land grant lands	4,308,151.13	4,961,371.17	Unmatured rents accrued	9,699.47	7,456.57	
	\$6,345,906.23	\$8,061,317.16	Other current liabilities	181,756.36	148,530.89	
Total Capital Assets.	\$782,028,517.31	\$774,366,341.03	Total Current Liabilities	\$16,548,877.78	\$16,861,457.92	
CURRENT ASSETS			DEFERRED LIABILITIES			
Cash	\$13,157,626.00	\$10,360,595.40	Other deferred liabilities	\$225,568.63	\$210,415.14	
Special deposits	5,335,596.50	5,749,328.89	Total Deferred Liabilities	\$225,568.63	\$210,415.14	
Loans and bills receivable	52,151.97	101,036.00	UNADJUSTED CREDITS			
Traffic and car service balances receivable ..	1,775,903.84	1,964,959.94	Tax liability	\$8,645,519.15	\$7,478,131.13	
Net balances receivable from agents and conductors	777,921.55	727,247.69	Accrued depreciation of equipment	43,439,985.77	40,466,753.24	
Miscellaneous accounts receivable	3,890,109.90	3,744,518.99	Other unadjusted credits	3,761,405.00	1,276,290.06	
Material and supplies ..	11,364,792.01	10,935,207.43	Total Unadjusted Credits	\$55,846,909.92	\$49,221,174.43	
Interest, dividends and rents receivable	68,127.00	118,338.76	CORPORATE SURPLUS			
Other current assets ..	119,557.62	131,613.44	Additions to property through income and surplus	\$513,923.05	\$493,772.20	
Total Current Assets	\$36,541,786.39	\$33,832,846.54	Funded debt retired through income and surplus	16,903,994.54	16,723,002.79	
DEFERRED ASSETS			Miscellaneous fund reserves	313,838.05	283,214.30	
Working fund advances	\$45,051.16	\$26,837.12	Total Appropriated Surplus	\$17,731,755.64	\$17,499,989.29	
Other deferred assets ..	190,330.67	299,094.03	Profit and loss balance ..	170,120,809.15	163,757,021.89	
Total Deferred Assets	\$235,381.83	\$325,931.15	Total Corporate Surplus	\$187,852,564.79	\$181,257,011.18	
UNADJUSTED DEBITS						
Rents and insurance premiums paid in advance	\$25,638.99	\$28,238.99				
Balance of Guaranty due from Government	2,760,606.14	2,775,317.59				
Discount on funded debt	2,412,287.54	2,451,599.87				
Other unadjusted debits	4,439,853.37	3,113,251.29				
Total Unadjusted Debits	\$9,638,386.04	\$8,368,407.74				
Grand Total	\$828,444,071.57	\$816,893,526.46	Grand Total	\$828,444,071.57	\$816,893,526.46	

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Railway Finance

(Continued from page 1479)

May 15, 1932, are to retain conversion rights up to and including the date of redemption.

The corporation will covenant in the indenture that on July 1, 1928, and in each year thereafter, it will pay as a cumulative sinking fund a sum equivalent to one-half of any cash dividends in excess of 8 per cent paid on the pledged stock during the 12 months preceding, out of earnings realized after January 1, 1927, but with minimum cash payments beginning July 1, 1930, aggregating \$960,000 per annum less 2 per cent of the principal amount of the bonds which shall have been retired otherwise than through the sinking fund. Such minimum cash payments, in connection with other provisions of the indenture, are calculated to retire over one-half of the bonds prior to maturity. The indenture will contain protective provisions in respect of stock and property dividends. Sinking fund payments are to be applied to the acquisition from the corporation or others of bonds if obtainable at or below 100 per cent and accrued interest, or, if not so obtainable, to the redemption at 100 per cent and accrued interest of bonds called by lot.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to sell \$650,000 of first and general mortgage 5 per cent bonds and to nominally issue \$350,000 of the same bonds, in exchange and cancellation of \$1,000,000 of unsold first and general mortgage 6 per cent bonds. The company had made arrangements to sell the bonds to Harris-Forbes & Co., and Potter & Co., at 100.5.

DELAWARE & HUDSON.—Segregation of Coal Properties.—President L. F. Loree told stockholders at the annual meeting that there had been a study made and data prepared in the past year relative to the segregation of the coal properties. "The board has not finally acted on the matter," he said. "When it does, which I hope will be in the ensuing year, all the stockholders will be notified."

DULUTH, SOUTH SHORE & ATLANTIC.—1926 Earnings.—Annual report for 1926 shows a deficit after interest and other charges of \$428,290, as compared with a deficit of \$118,712 in 1925. Selected items from the income statement follow:

	1926	1925
RAILWAY OPERATING REVENUES	\$5,281,270	\$5,808,935
TOTAL OPERATING EXPENSES	\$4,406,891	\$4,611,035
NET REVENUE FROM OPERATIONS	\$874,379	\$1,197,900
Railway tax accruals ..	346,103	336,661
Railway operating income	\$528,258	\$861,105
NET RAILWAY OPERATING INCOME.....	Not shown	
Non-operating income..	\$131,907	\$162,955
GROSS INCOME.....	\$660,165	\$1,024,060
Interest on funded debt	880,158	886,021
TOTAL DEDUCTIONS FROM GROSS INCOME.....	\$1,088,455	\$1,142,772
NET DEFICIT.....	\$428,290	\$118,712

ERIE.—Bonds Sold.—J. P. Morgan & Co., the First National Bank of New York and the National City Company have sold \$50,000,000 refunding and improvement mortgage 5 per cent bonds, series of 1927, at 94½ and accrued interest to yield over 5.30 per cent to maturity. The bonds mature May 1, 1967, and are redeemable in whole or in part at the company's option upon 60 days' notice, on any interest payment date at 105 and accrued interest. The bonds are to be

issued under mortgage dated December 1, 1916, which is to be amended by the supplemental indenture. The purpose of the issue is stated as follows:

The proceeds of this issue will be applied, in part, to the payment and retirement of \$32,919,450 short-term notes and loans, including the 6 per cent collateral notes held by the United States Government and those formerly held by the Director-General of Railroads, and \$10,000,000 two-year secured 4½ per cent gold notes which are to be called for retirement on July 1, 1927. Upon the retirement of such obligations, the company will be entirely free from floating debt. The balance of the proceeds will be used for additions and betterments to the company's property, to increase its working capital and for other corporate purposes.

Subject to underlying mortgages securing \$195,252,300 bonds outstanding in the hands of the public, the refunding and improvement mortgage covers substantially all the railroads of the Erie System, comprising about 2,185 miles of line. The mortgage is a direct lien on 858 miles of road owned in fee and a lien upon the company's rights by stock ownership, leasehold and otherwise in the rest of the system covered by the mortgage. Upon the retirement of the above mentioned short-term notes and loans from the proceeds of this issue, these \$50,000,000 bonds will be the only bonds outstanding under the mortgage.

Subject to the prior liens of the company's Pennsylvania collateral indenture and of its general mortgage securing, respectively, \$13,140,000 4 per cent bonds and \$37,331,600 4 per cent convertible bonds outstanding in the hands of the public, the mortgage has a lien upon the entire capital stock of the Pennsylvania Coal Company, which has no funded debt outstanding. The coal company's average annual net earnings for the ten years ended December 31, 1926 were \$4,130,575, as compared with \$2,018,864, the present total annual interest charges on the prior debt secured on that company's capital stock. The latter figure will be reduced to approximately \$1,330,000 if all the series D general mortgage bonds are converted prior to the expiration of the conversion privilege on October 1, 1927, and will be further reduced to \$840,600 upon the complete retirement of the Pennsylvania collateral bonds, which, based on the current rate of retirement by sinking fund, should be effected by December 31, 1935.

GULF, MOBILE & NORTHERN.—Control of Birmingham & Northwestern.—The Interstate Commerce Commission has authorized the Gulf, Mobile & Northern to acquire 2,090 of the 3,000 outstanding shares of the capital stock of the Birmingham & Northwestern from I. B. Tigrett & Co. at a nominal price of \$5,000 and also to operate the property by lease. The Birmingham & Northwestern connects with the Gulf, Mobile & Northern at Jackson, Tenn., and extends northwesterly to Dyersburg, 49.5 miles.

HUDSON & MANHATTAN.—Rumors.—Rumors are current that the Baltimore & Ohio is acquiring stock of the Hudson & Manhattan as a means of securing additional entrance into New York. The Hudson & Manhattan operates the Hudson Tubes extending under the Hudson River from Manhattan to Jersey City and Hoboken and has an operating agreement with the Pennsylvania covering service to Newark.

LONG ISLAND.—New Director.—Alfred H. Swayne, vice-president of the General Motors Corporation, has been elected a director succeeding Bayard Henry, deceased.

MINERAL RANGE.—1926 Earnings.—Annual report for 1926 shows a deficit after interests and other charges of \$90,055, as compared with net income of \$486 in 1925. Selected items from the income statement follow:

	1926	1925
RAILWAY OPERATING REVENUES	\$285,178	\$501,042
TOTAL OPERATING EXPENSES	\$271,737	\$397,232

NET REVENUE FROM OPERATIONS	\$13,440	\$103,811
Railway tax accruals ..	50,186	57,238
Railway operating income	Def. \$36,746	\$46,537
NET RAILWAY OPERATING INCOME.....	Not shown	
Non-operating income..	\$46,682	\$53,476
GROSS INCOME.....	\$9,937	\$100,013
Interest on funded debt	83,360	83,360
TOTAL DEDUCTIONS FROM GROSS INCOME.....	\$99,991	\$99,527
NET INCOME.....	Def. \$90,055	\$486

MINNEAPOLIS & ST. LOUIS.—Bonds.—The receiver has applied to the Interstate Commerce Commission for authority to enter into contracts with F. J. Lisman & Co., of New York, for the extension of \$950,000 of first mortgage 7 per cent bonds, due June 1, 1927, for a five-year period at 6 per cent, paying to Lisman & Co., a commission of 2½ per cent.

MISSOURI & NORTH ARKANSAS.—Equipment Released from Mortgage.—The Interstate Commerce Commission on May 6 made public a supplemental report dated April 29, approving the release from the lien of the mortgage securing a government loan of \$3,500,000 to this company of certain equipment, on the rehabilitation of which \$329,500 of the proceeds of the loan had been expended. The company stated that it desired to issue \$500,000 of 6 per cent equipment trust notes against the equipment, to raise additional funds to enable it to meet pressing requirements for capital expenditures and operating expenses, and the commission's approval was conditioned on its approval of the issue of such notes with a provision that \$251,000 of them should be pledged as additional security for the government loan. The report said that the recent floods had created a grave emergency for the company, that, with 20 miles of track under water, it had practically ceased operation, and that, although the company was in default of \$568,958 in interest on the loan, it had arrived at the conclusion that it would be distinctly to the advantage of the United States as well as the applicant and the interested public, if it should approve this available means for placing the property in a condition to resume the service of transportation. "The only alternative," it said, "is a receivership with doubtful outcome. The possibility of merger with some stronger line or system would probably be lessened in the latter eventuality should conditions otherwise be favorable in the near future."

Receivership.—The property was placed in the hands of a receiver on May 4 under an order issued by Judge Trieber of the United States district court, following the filing of a petition by the Western Tie & Timber Company, of St. Louis. W. E. Stephenson, president and general manager, was appointed receiver.

MISSOURI PACIFIC.—New Director.—Matthew C. Brush of New York was elected a director at the annual meeting. Stockholders also authorized an increase in the bonded indebtedness of the company not exceeding \$100,000,000 to be used from time to time at the discretion of the directors or the executive board.

NATIONAL STEEL CAR LINES.—Equipment Trust.—Freeman & Co. of New York have sold \$600,000 National Steel Car Lines Company 5½ per cent equipment trust certificates, series I, at prices to yield 5 to 5.50 per cent according to maturity. The equipment includes 528 tank cars.

NEW YORK, CHICAGO & ST. LOUIS.—1926 Earnings.—Annual report for 1926 shows net income after interest and other charges of \$8,066,308 equivalent after preferred dividends to \$21.47 a share on the common stock. Net income in 1925 was \$6,445,807 or \$16.14 a share. Selected items from the income statement follow:

New York, Chicago & St. Louis		1926	1925
Average mileage operated—			
RAILWAY OPERATING			
REVENUES		\$54,938,491	\$54,670,917
Maintenance of way		\$7,057,603	\$7,301,034
Maintenance of equipment		10,717,935	10,168,327
Transportation		18,952,053	19,065,059
TOTAL OPERATING EXPENSES		\$39,990,395	\$39,604,201
Operating ratio		72.79	72.44
NET REVENUE FROM			
OPERATIONS		\$14,948,096	\$15,066,716
Railway tax accruals		2,998,864	2,965,518
Railway operating income		\$11,939,055	\$12,093,291
NET RAILWAY OPERATING			
INCOME	Not Shown		
Non-operating income		\$4,027,249	\$1,907,198
GROSS INCOME		\$15,966,305	\$14,000,489
Interest on funded debt		5,398,861	5,120,396
TOTAL DEDUCTIONS FROM GROSS INCOME		\$7,899,997	\$7,554,682
NET INCOME		\$8,066,308	\$6,445,807
Disposition of net income—			
Income applied to sinking funds		\$98,686	\$98,429
Dividends		4,887,239	3,367,807
Surplus for year carried to profit and loss		\$3,080,383	\$2,979,639

ST. LOUIS SOUTHWESTERN.—Election of Director.—Frank M. Gould of New York was elected as a member of the board of directors at the annual meeting on May 5. Mr. Gould replaces Walter E. Meyer who opposed the merger of the Cotton Belt, the Kansas City Southern and the Missouri-Kansas-Texas.

SOUTHERN.—Hearing on Tentative Valuation.—Hearings on the protests against the Interstate Commerce Commission tentative valuations of the various properties included in the Southern system are to begin at Washington on June 20, before Examiners Marchand and Conway.

TEXAS & NEW ORLEANS.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Rockland, Tex., to Turpentine, 10.5 miles.

WHEELING & LAKE ERIE.—1926 Earnings.—Annual report for 1926 shows net income after interest and other charges of \$3,507,355 equivalent to \$29.51 per share on the prior lien stock as composed with \$3,286,279 or \$27.65 a share on this in 1925. No preferred dividends on this issue have been paid so that there are over 70 per cent accumulated dividends in arrears. After allowance for 7 per cent dividends on this issue and for 6 per cent dividends on the 6 per cent preferred stock net was

equivalent to \$6.10 a share on the common stock as compared with \$5.45 in 1925. Selected items from the income statement follow:

Wheeling & Lake Erie

	1926	1925
Average mileage operated—		
RAILWAY OPERATING		
REVENUES	\$20,925,899	\$20,395,619
Maintenance of way	\$3,114,861	\$2,680,816
Maintenance of equipment	4,816,739	4,678,490
Transportation	6,072,913	6,040,044
TOTAL OPERATING EXPENSES	\$14,984,089	\$14,400,990
Operating ratio	71.61	70.61
NET REVENUE FROM		
OPERATIONS	\$5,941,810	\$5,994,629
Railway tax accruals	1,664,998	1,568,458
Railway operating income	\$4,273,160	\$4,442,062
Hire of freight cars	Cr. 109,162	Dr. 46,073
Joint facility rents	Dr. 40,959	\$8,466
NET RAILWAY OPERATING		
INCOME	Not Shown	
Non-operating income	\$540,828	\$349,156
GROSS INCOME	\$4,813,988	\$4,771,219
Interest on funded debt	1,137,178	1,278,881
TOTAL DEDUCTIONS FROM GROSS INCOME	\$1,306,634	\$1,484,940
NET INCOME	\$3,507,355	\$3,286,279
Disposition of net income—		
Investment in road and equipment	\$100,307	\$141,612
Income applied to sinking and other reserve funds		30,000
Surplus for year carried to profit and loss	\$3,407,048	\$3,114,667

WEST VIRGINIA NORTHERN.—Court Dismisses Valuation Case.—Judge Dickerson of the United States District Court at Philadelphia on May 10 dismissed a suit against the government by the West Vir-

ginia Northern opposing a valuation of \$264,863 as of June 30, 1918, the railroad contending that the real value should be \$779,509. Judge Dickerson dismissed the suit on the ground that the action was in the same category with that of the Los Angeles & Salt Lake case recently decided by the United States Supreme Court.

Average Price of Stocks and Bonds

	May 10	Last week	Last year
Average price of 20 representative railway stocks	112.50	109.31	88.83
Average price of 20 representative railway bonds	94.97	94.28	91.13

Dividends Declared

Canadian Pacific.—Common, 2½ per cent, quarterly, payable June 30 to holders of record June 1.

Chicago & North Western.—Common, 2 per cent, semi-annually; preferred, 3½ per cent, semi-annually, both payable June 30 to holders of record June 1.

New York, Chicago & St. Louis.—Common, 2¼ per cent, quarterly; preferred, 1½ per cent, quarterly, both payable July 1 to holders of record May 16.

Valuation Reports

The Interstate Commerce Commission has issued final or tentative valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

Final Reports

Manitou & Pike's Peak	\$368,741	1918
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Tentative Reports

Lancaster & Chester	\$485,650	1918
Millers Creek	162,798	1918
Northwestern of South Carolina	711,300	1918
Electric Short Line Terminal	935,000	1920
Etna & Montrose	195,000	1918
Massena Terminal	212,488	1919
Peoria & Pekin Union	4,805,882	1919

Railway Officers

Financial, Legal and Accounting

J. N. Flowers, special attorney of the Gulf, Mobile & Northern, with headquarters at Jackson, Miss., has been promoted to general solicitor, with headquarters at Mobile, Ala., succeeding **Joseph C. Rich**, deceased.

W. P. Dolan has been appointed car accountant of the Coast lines of the Atchison, Topeka & Santa Fe, with headquarters at Los Angeles, Cal., succeeding **S. M. Saltmarsh**, deceased.

Robert B. Tunstall has been appointed assistant general counsel of the Chesapeake & Ohio and the Hocking Valley, with headquarters at Richmond, Va. **C. R. Lowry** has been appointed assistant attorney, with headquarters at Richmond.

Operating

F. E. Slater, chief clerk in the operating department of the Pacific Lines of the Southern Pacific at San Francisco,

Cal., has been promoted to supervisor of transportation, with headquarters at the same point.

J. M. Trefren has been appointed trainmaster of the Tucson division of the Southern Pacific, with headquarters at Yuma, Ariz., succeeding **V. S. Burnham**, who has been transferred to the Western division, with headquarters at Suisun, Cal. Mr. Burnham succeeds **G. D. Wright**, who has been transferred to a newly created district, with headquarters at Oakland, Cal. **T. W. Cardwell** has been appointed trainmaster of the Salt Lake division, with headquarters at Carlin, Utah, succeeding **S. H. Bray**, who has been transferred to the San Joaquin division, with headquarters at Mojave, Cal. Mr. Bray succeeds **C. G. Tandy**, who has been transferred to the Stockton division, with headquarters at Tracy, Cal.

A. D. Handley, who has been promoted to superintendent of the Sonora division of the Southern Pacific of Mexico, with headquarters at Empalme, Son., was born on February 25, 1888, at Seguin, Tex. He attended high school at San Antonio, Tex., and entered

railway service on August 4, 1904, as a call boy on the Sunset Central lines of the Southern Pacific. Mr. Handley then served successively with the Southern Pacific at various points as clerk, brakeman and yardmaster until March 15, 1926, when he was promoted to assistant superintendent of the Sonora division of the Southern Pacific of Mexico. He remained in this position until his further promotion to superintendent of the same division.

H. A. Moynihan, superintendent of the Old Colony division of the New York, New Haven & Hartford, with headquarters at Taunton, Mass., has been appointed superintendent of the Providence division, with headquarters at Providence, R. I., succeeding **G. A. Poore**. **H. E. Astley**, superintendent of the Midland division, with headquarters at Boston, Mass., has been appointed superintendent of the Old Colony division, succeeding Mr. Moynihan. **J. J. Snively**, superintendent of the Waterbury division, with headquarters at Waterbury, Conn., has been appointed superintendent of the Midland division, succeeding Mr. Astley. **R. O'Hanley**, assistant superintendent of the Boston division, has been appointed superintendent of the Waterbury division succeeding Mr. Snively, and **W. S. Carr** has been appointed assistant superintendent of the Boston division, succeeding Mr. O'Hanley.

Traffic

Randolph B. Cooke, who has been appointed general freight and passenger agent of the Pennsylvania, with headquarters at Norfolk, Va., was born on December 30, 1883, at Norfolk, Va., and was educated at Norfolk Academy,



R. B. Cooke

Brown University School and at the University of Virginia. He entered railway service on July 14, 1905, with the New York, Philadelphia & Norfolk (now a part of the Pennsylvania) as a rate clerk, which position he held until June 15, 1907. He then became freight solicitor, and served in that capacity until January 14, 1918, when he was appointed division freight and passenger

agent. This position he was holding at the time of his recent appointment as general freight and passenger agent.

J. J. Bloomer has been appointed general agent of the Pittsburgh & West Virginia and the West Side Belt, with headquarters at Chicago.

Hugh I. Scofield, who has been promoted to general passenger agent of the Denver & Rio Grande Western, with headquarters at Denver, Col., was born on November 27, 1885, at Cherry Creek, N. Y., and after graduating from the Cherry Creek high school in 1903 he entered the service of the Vandalia (now a part of the Pennsylvania) as a telegraph operator in 1904. From Au-



Hugh I. Scofield

gust, 1906, to June, 1909, Mr. Scofield served as an operator and clerk in the general freight office of the Wabash, at Buffalo, N. Y., and he then became cashier and assistant agent for the Denver & Rio Grande Western at Glenwood Springs, Colo. In June, 1910, he was appointed assistant auditor of freight traffic accounts on the Pere Marquette at Detroit, Mich., where he remained until April, 1913, when he became freight and passenger agent for the Missouri Pacific at the same point. Three years later Mr. Scofield returned to the D. & R. G. W. as traveling freight and passenger agent, with headquarters at Detroit, and in December, 1917, he was promoted to general agent. During 1918 he was a civilian employe in the ordnance department of the government at Detroit, returning to railroad service in the following year as general agent, handling both freight and passenger business for the Chicago, North Shore & Milwaukee at Chicago. Mr. Scofield was appointed general agent on the Denver & Rio Grande Western at Detroit on March 1, 1920, a position he held until his promotion to general passenger agent on April 1.

O. G. Hagemann, traveling freight agent of the Chicago, Burlington & Quincy at Indianapolis, Ind., has been promoted to general agent, with headquarters at the same point.

Elmer B. Johnson, a member of the staff of the general freight office of the Atchison, Topeka & Santa Fe at San Francisco, Cal., has been appointed general agent at Sacramento, Cal., succeeding **T. H. Warrington**, who retired under the pension rules of the company on May 7, after 33 years' service.

Mechanical

William Landess, chief electrician in charge of electrical maintenance of the Chicago Union Station Company at Chicago, has been promoted to assistant mechanical superintendent with supervision over all mechanical and electrical matters.

Engineering, Maintenance of Way and Signaling

W. H. Chapman, first electrical inspector, on the Chicago & North Western, with headquarters at Chicago, has been promoted to assistant electrical engineer, with headquarters at the same point, succeeding **J. A. Andreucetti**, promoted to electrical engineer.

Donald K. Crawford, general signal supervisor on the Western lines of the Atchison, Topeka & Santa Fe, with headquarters at La Junta, Colo., has been advanced to assistant signal engineer, a newly created position, with headquarters at the same point. He has been succeeded as general signal supervisor by **A. M. Staley**, signal supervisor at Las Vegas, New Mexico.

Purchases and Stores

Effective May 15, the purchasing and stores department of the Central of New Jersey will be consolidated under the jurisdiction of **E. A. Workman**, who is appointed manager of purchases and stores. Mr. Workman was formerly stores manager at New York. **C. B. Williams**, purchasing agent at New York, has been granted an extended leave of absence on account of ill health.

Obituary

Frank Blair Brown, general auditor of the Cincinnati, Indianapolis & Western, died on May 6, at his home in Indianapolis, Ind.

Samuel M. Saltmarsh, car accountant of the Coast lines of the Atchison, Topeka & Santa Fe, with headquarters at Los Angeles, Cal., died at his home on April 23 after an illness of two weeks with influenza. During the world war Mr. Saltmarsh served as colonel of the 158th New Mexico Infantry.

W. H. Harland, senior signal engineer of the Bureau of Signals and Train Control Devices of the Interstate Commerce Commission, has resigned and has been appointed director of traffic of the District of Columbia.

